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**River Mile System in Newark Bay Study Area**  
**Newark Bay RI/FS Oversight**

**Figure A**  
**August 2010**

## Legend

### Phase 1 Be7 Concentration (pCi/g)

- ◀ < 0.5
- ◀ 0.5 - 1.0
- ◀ 1.1 - 1.5
- ◀ 1.6 - 2.0
- ◀ > 2.0

◀ Not Detected by Laboratory

### Phase 2 Be7 Concentration (pCi/g)

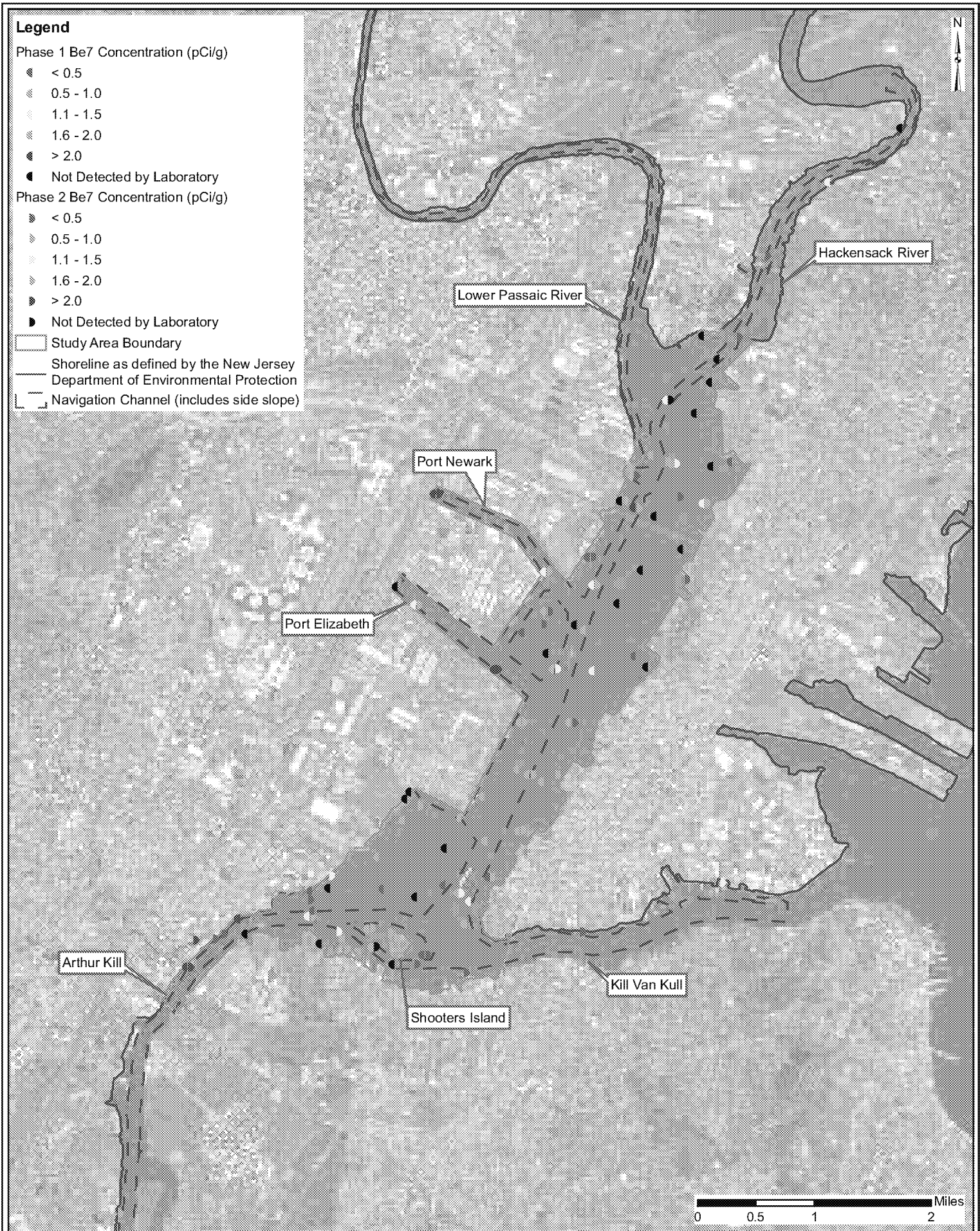
- ◀ < 0.5
- ◀ 0.5 - 1.0
- ◀ 1.1 - 1.5
- ◀ 1.6 - 2.0
- ◀ > 2.0

◀ Not Detected by Laboratory

Study Area Boundary

Shoreline as defined by the New Jersey  
Department of Environmental Protection

Navigation Channel (includes side slope)



**Beryllium-7 Concentration in Phase 1 and Phase 2 Surface Sediment (0-1 inch)**

*Newark Bay RI/FS Oversight*

Figure B

October 2010





# Legend

## Phase 1 Be7 Concentration (pCi/g)

- ◼ < 0.5
- ◼ 0.5 - 1.0
- ◼ 1.1 - 1.5
- ◼ 1.6 - 2.0
- ◼ > 2.0

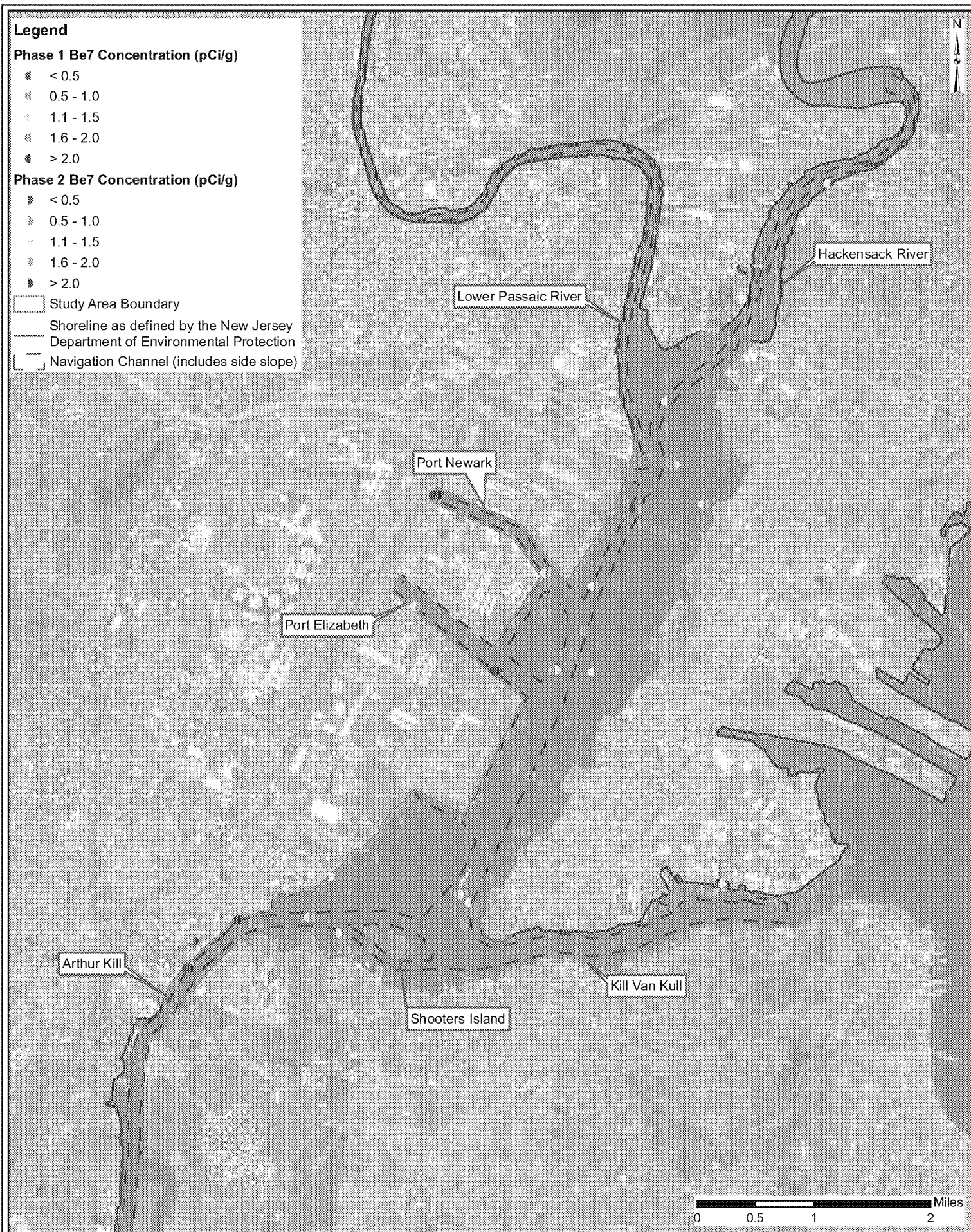
## Phase 2 Be7 Concentration (pCi/g)

- ◼ < 0.5
- ◼ 0.5 - 1.0
- ◼ 1.1 - 1.5
- ◼ 1.6 - 2.0
- ◼ > 2.0

◻ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)



Beryllium-7 Concentration greater than or equal to 0.5pCi/g  
in Phase 1 and Phase 2 Surface Sediment (0-1 inch).

**Newark Bay RI/FS Oversight**

Figure C

October 2010



# Legend

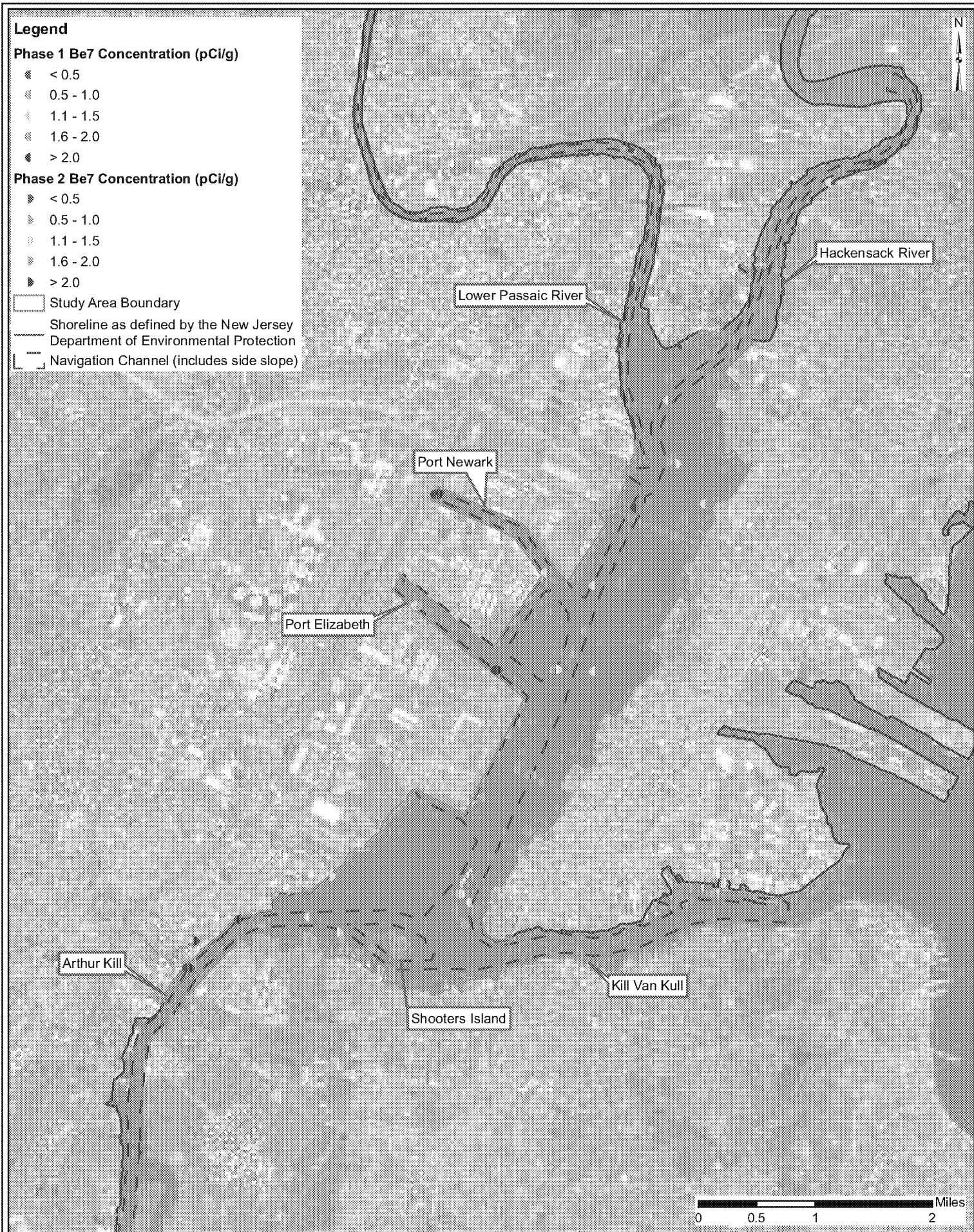
## Phase 1 Be7 Concentration (pCi/g)

- ◀ < 0.5
- ◀ 0.5 - 1.0
- ◀ 1.1 - 1.5
- ◀ 1.6 - 2.0
- ◀ > 2.0

## Phase 2 Be7 Concentration (pCi/g)

- ▶ < 0.5
- ▶ 0.5 - 1.0
- ▶ 1.1 - 1.5
- ▶ 1.6 - 2.0
- ▶ > 2.0

- Study Area Boundary
- Shoreline as defined by the New Jersey Department of Environmental Protection
- Navigation Channel (includes side slope)



Beryllium-7 Concentration greater than or equal to 1pCi/g  
in Phase 1 and Phase 2 Surface Sediment (0-1 inch)

**Newark Bay RI/FS Oversight**

Figure D

October 2010



## Legend

Phase1 - 2,3,7,8 TCDD (ng/kg)

- ◀ < 3.0
- ◀ 3.1 - 10.0
- ◀ 10.1 - 30.0
- ◀ 30.1 - 100.0
- ◀ 100.1 - 300.0
- ◀ > 300

Phase2 - 2,3,7,8 TCDD (ng/kg)

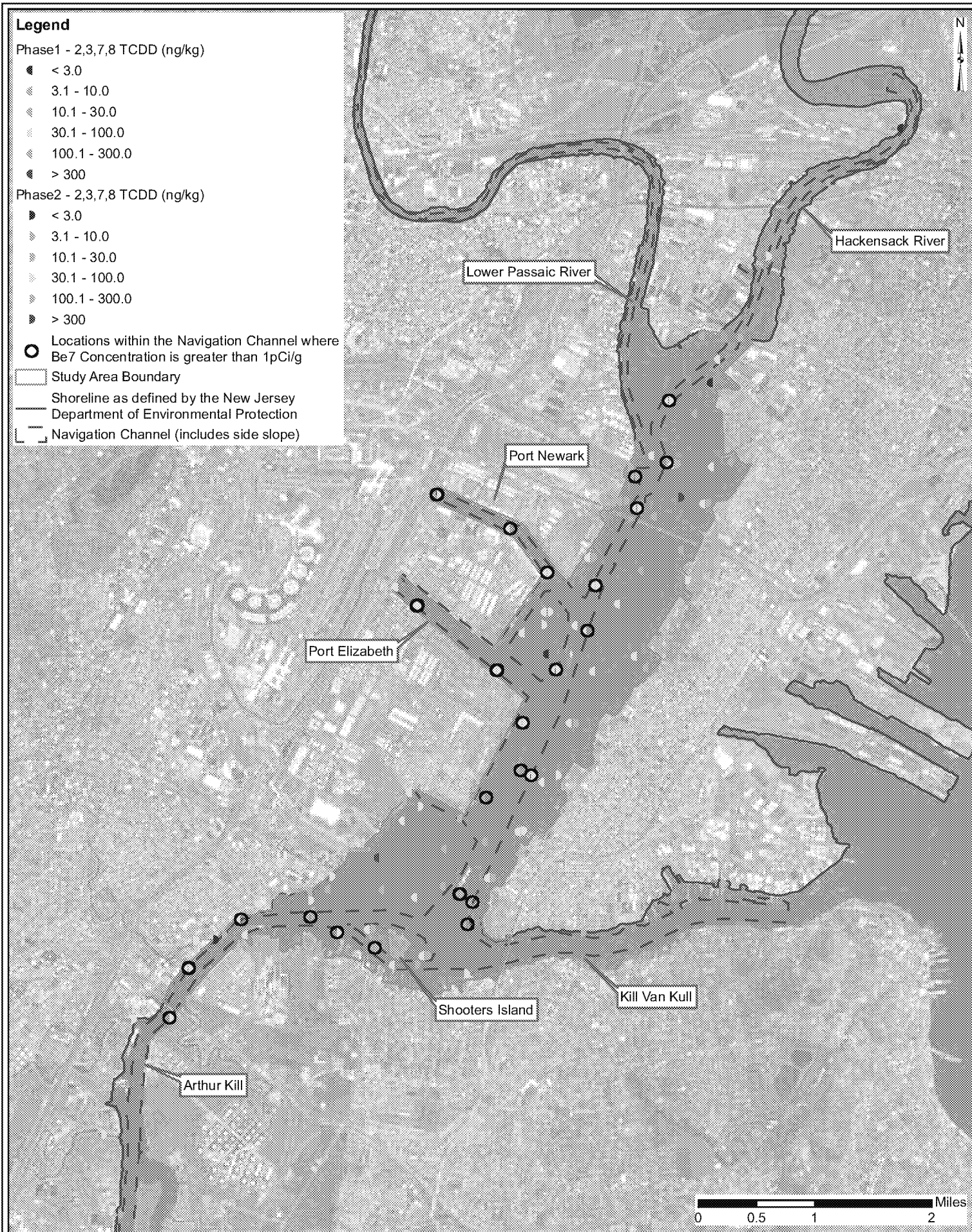
- ▶ < 3.0
- ▶ 3.1 - 10.0
- ▶ 10.1 - 30.0
- ▶ 30.1 - 100.0
- ▶ 100.1 - 300.0
- ▶ > 300

○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

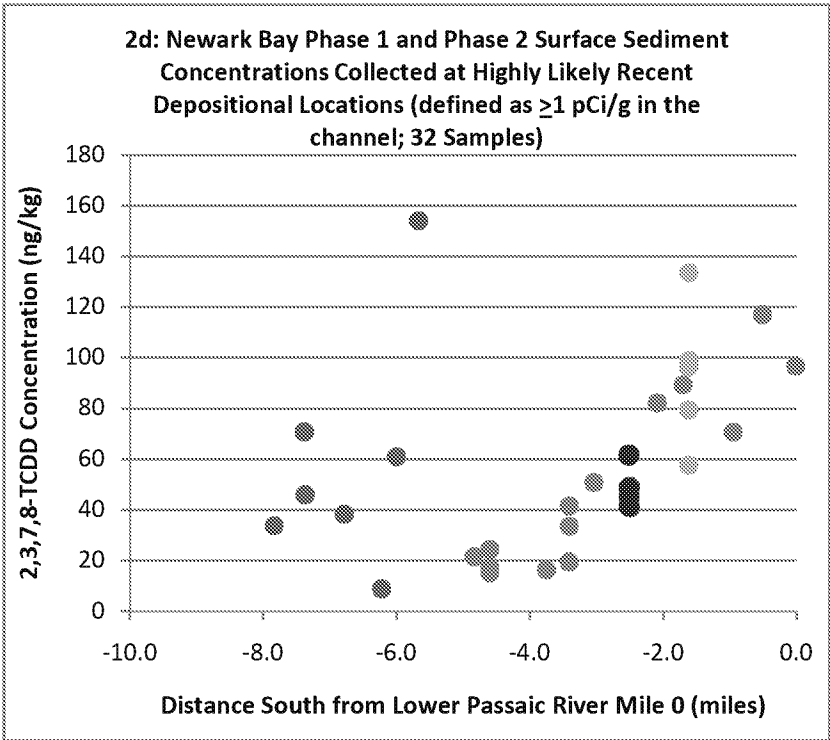
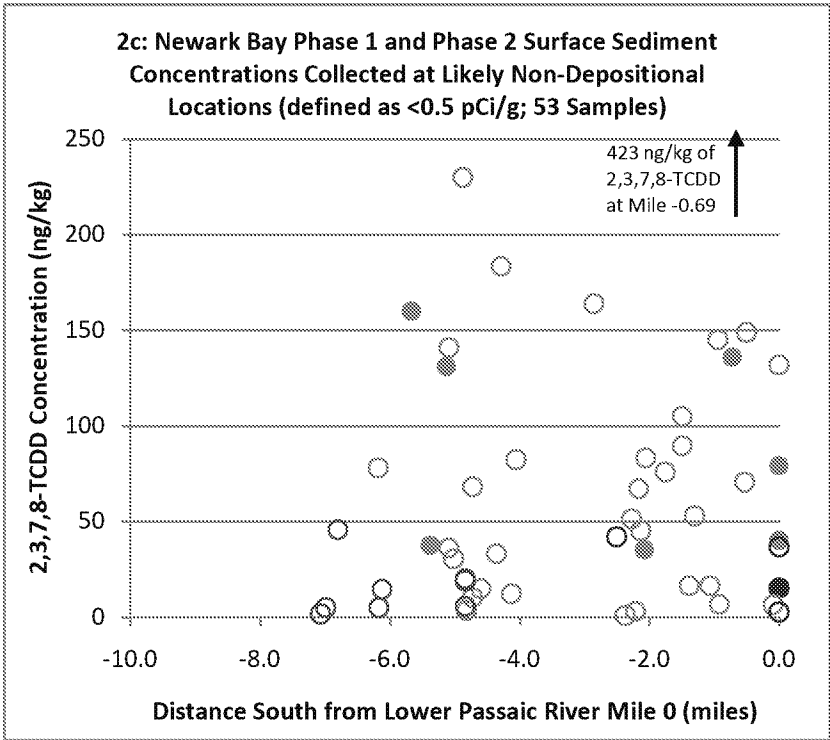
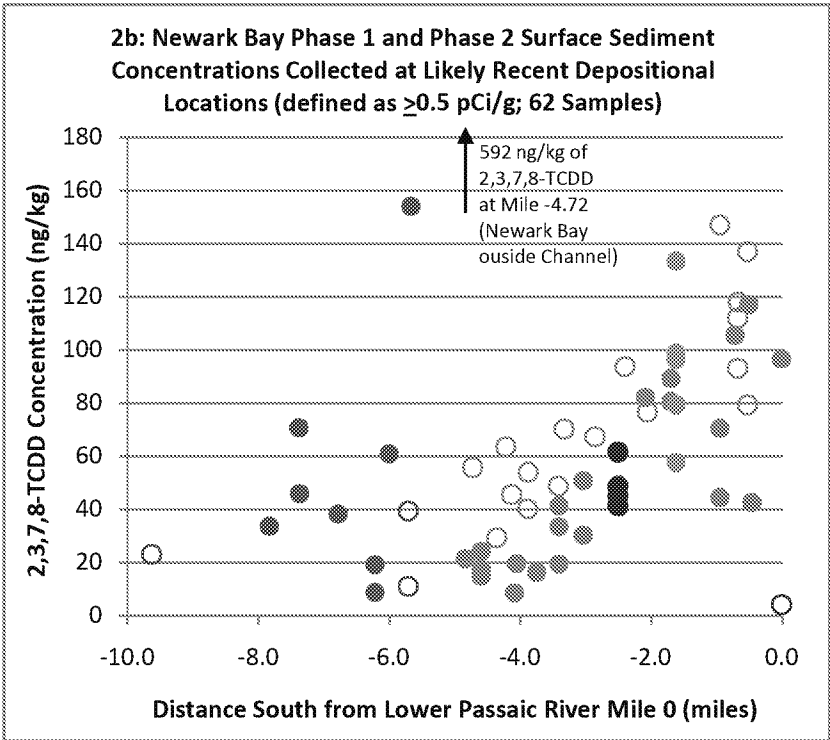
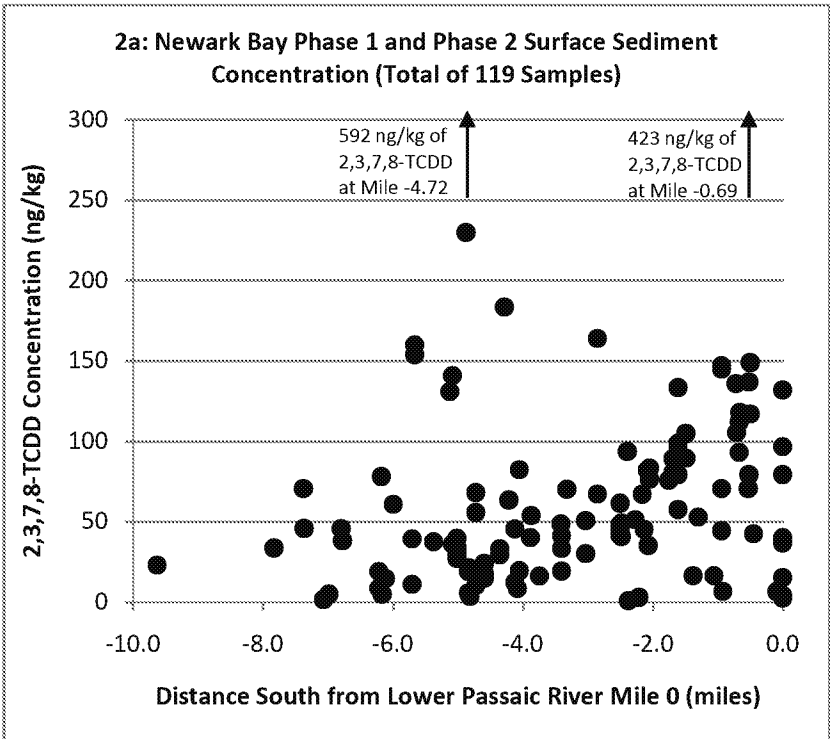
□ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)







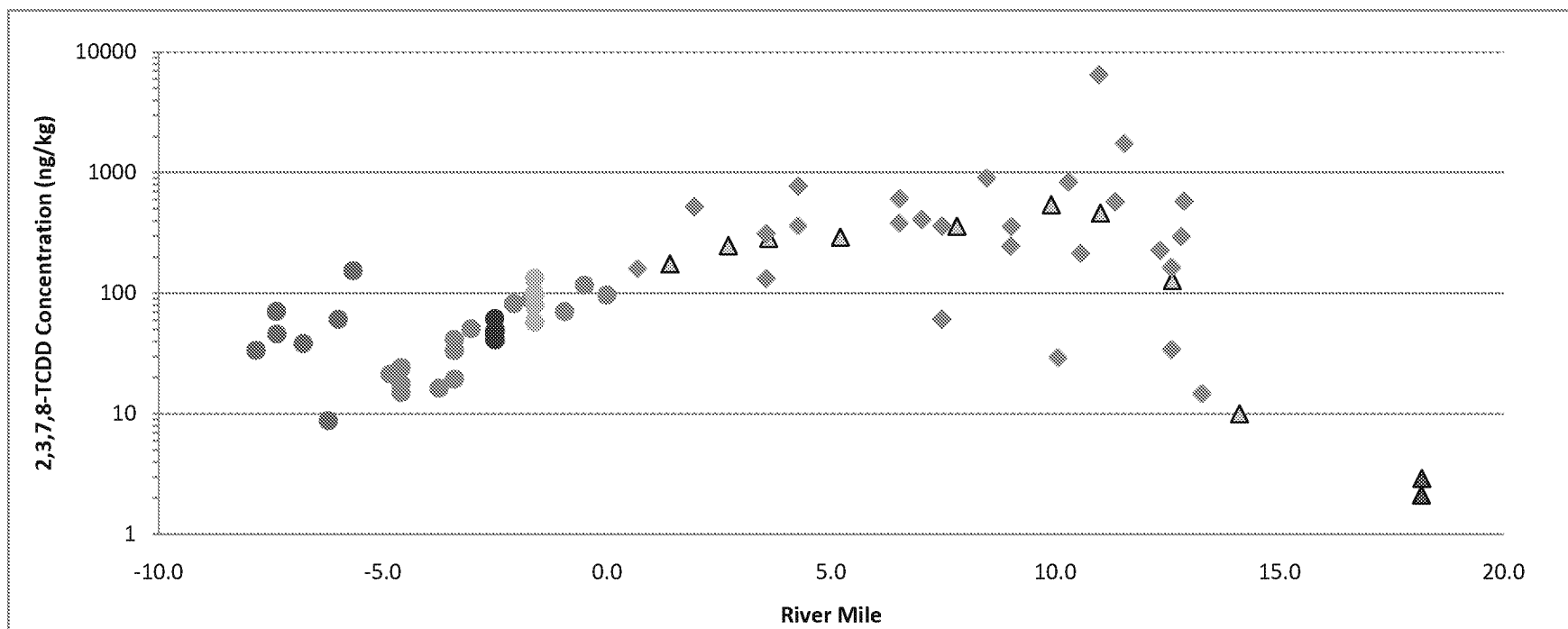
**Legend**

- All Phase 1 and 2 Sampling Locations
- Newark Bay Navigational Channel (includes side slopes)
- Newark Bay Outside of Channel
- Port Elizabeth Navigational Channel (includes side slopes)
- Port Elizabeth Outside of Channel
- Port Newark Navigational Channel (includes side slopes)
- Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
- Shooters Island and Arthur Kill Outside of Channel
- Hackensack River Navigational Channel (includes side slopes)
- Hackensack River Outside of Channel
- Kill Van Kull Outside of Channel

**Notes**

- 2,3,7,8-TCDD surface concentrations represent the top 6 inches of the core.
- When duplicate 2,3,7,8-TCDD values are provided by the laboratory, the average concentration is plotted.
- No nondetect 2,3,7,8-TCDD concentrations were reported in surface sediment samples.
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source tracking). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile -1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
- Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values for 2,3,7,8-TCDD are not available in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.





#### Legend

- Newark Bay Navigational Channel (includes side slopes; TSI 2005/2007)
- Port Elizabeth Navigational Channel (includes side slopes; TSI 2005/2007)
- Port Newark Navigational Channel (includes side slopes; TSI 2005/2007)
- Shooters Island and Arthur Kill Navigational Channel (includes side slopes; TSI 2005/2007)
- ▲ Lower Passaic River (MPI 2008)
- ▲ Upper Passaic River (MPI 2008)
- ◆ Lower Passaic River (CPG 2008)

#### Notes

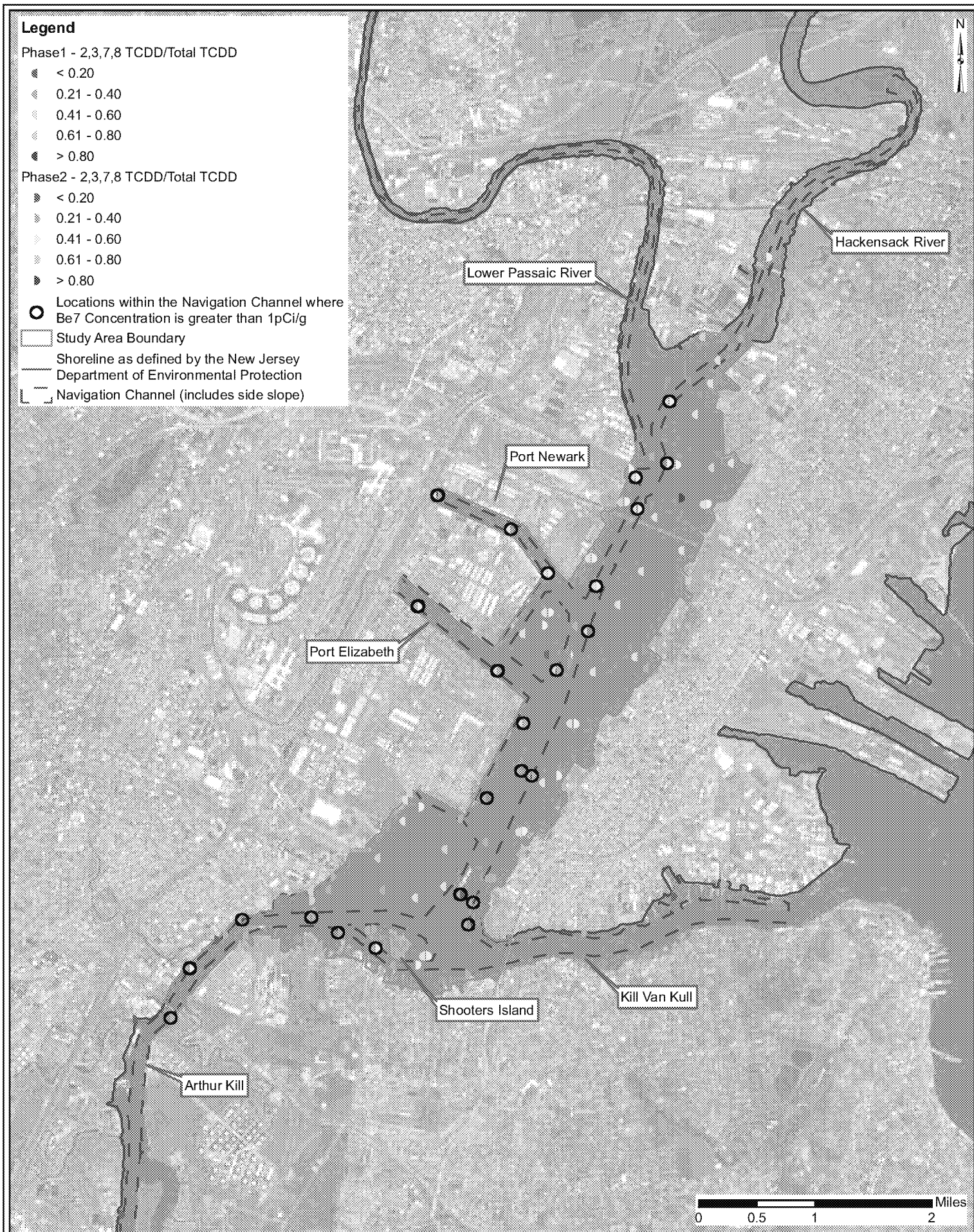
- 1- Newark Bay Phase 1 and Phase 2 surface sediment concentrations collected at highly likely recent depositional locations (defined as  $\geq 1$  pCi/g in the channel; 32 samples).
- 2- Lower Passaic River surface sediment concentrations collected at likely recent depositional locations (defined as  $\geq 0.5$  pCi/g in the channel; 9 samples).
- 3- Upper Passaic River surface sediment concentrations collected at likely recent depositional locations (defined as  $\geq 0.5$  pCi/g in the channel; 2 samples).
- 4- Lower Passaic River CPG 2008 surface sediment concentrations collected at highly likely recent depositional locations (defined as  $\geq 1$  pCi/g; 26 samples).

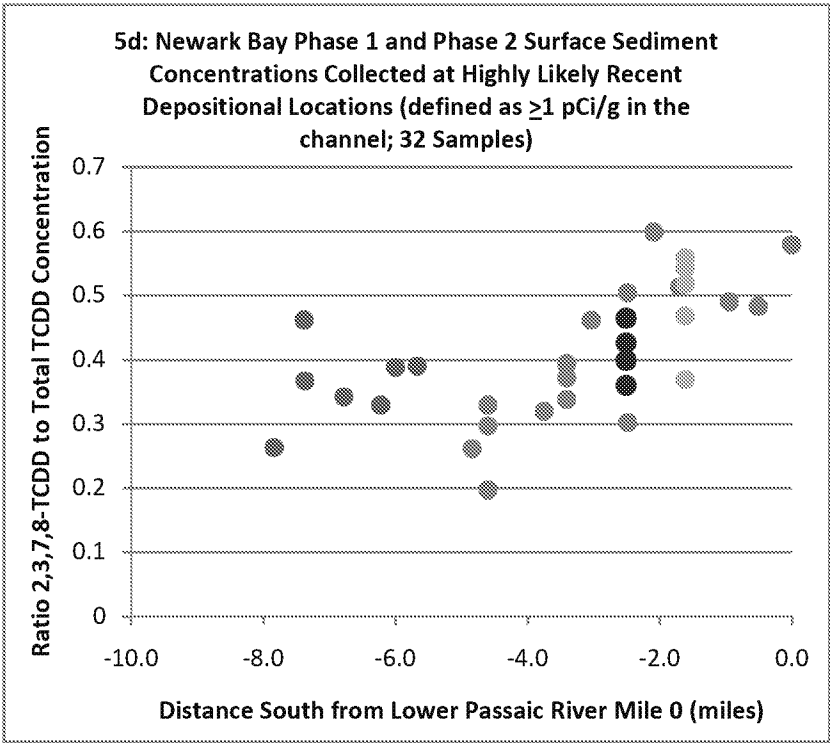
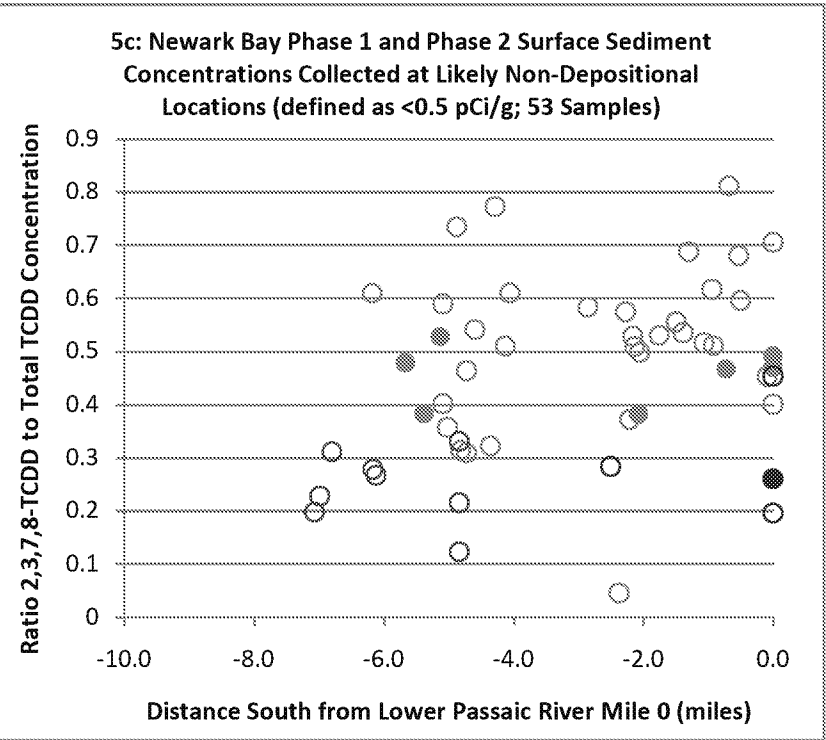
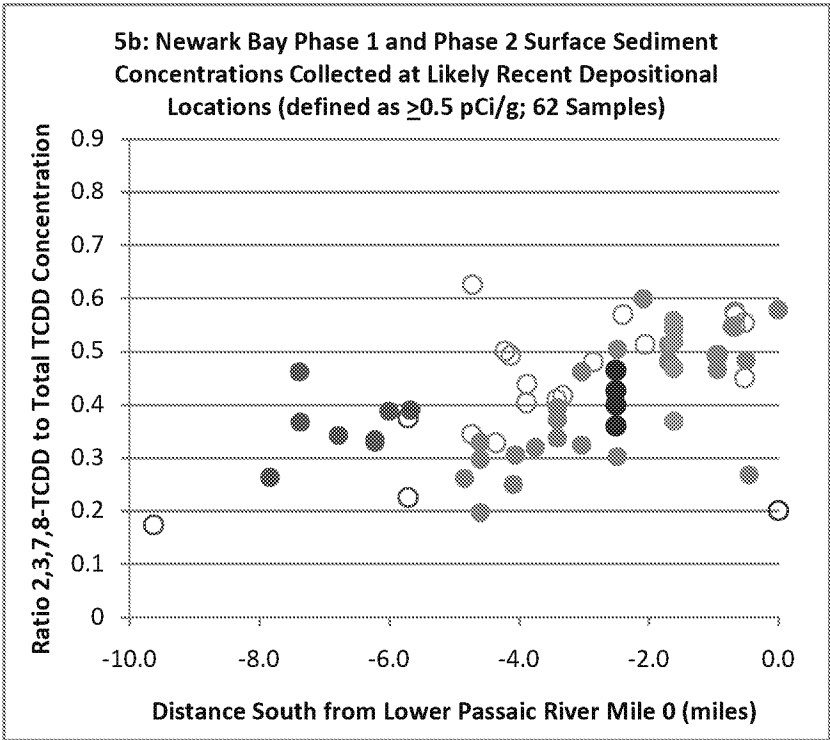
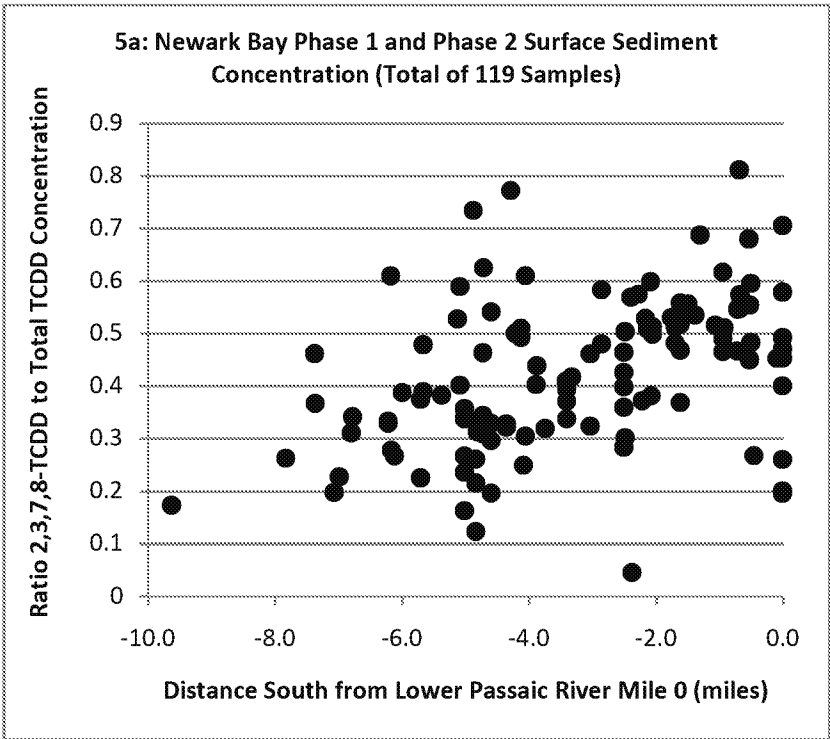


2,3,7,8-TCDD Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

October 2010

Figure 3



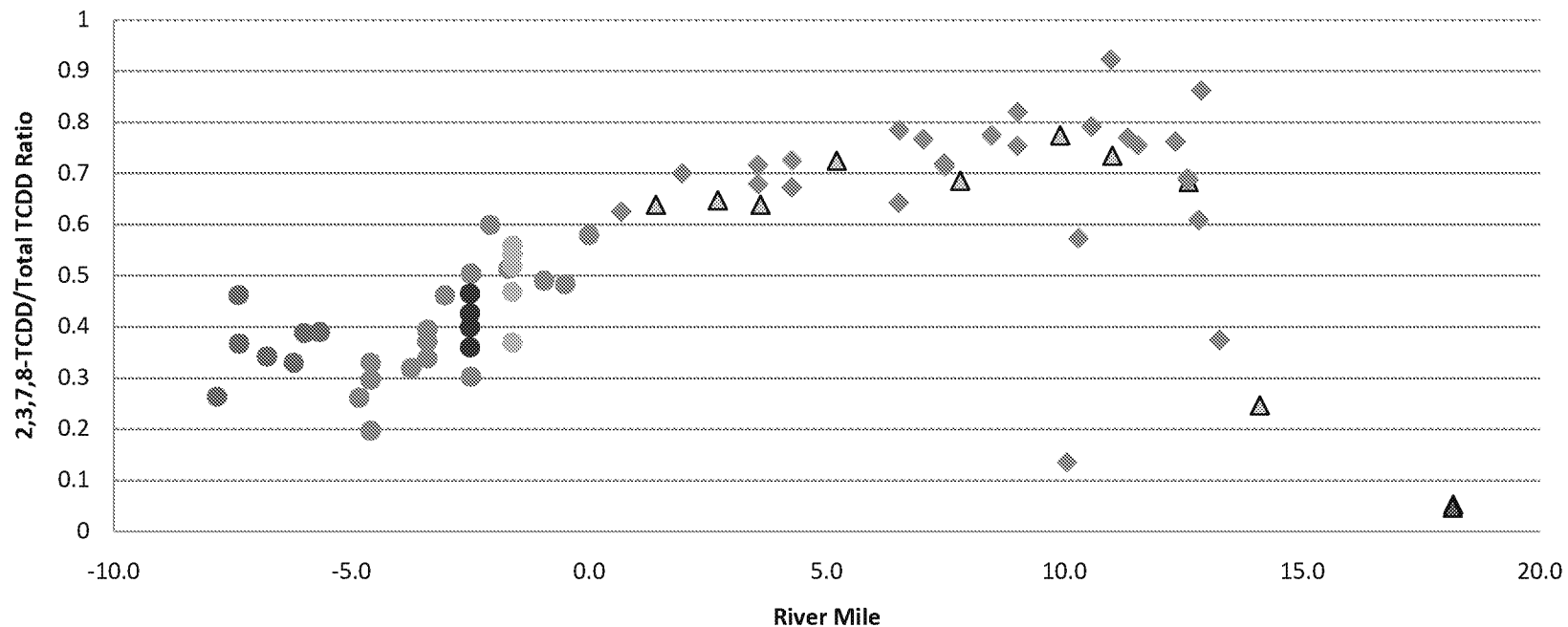


- Legend**
- All Phase 1 and 2 Sampling Locations
  - Newark Bay Navigational Channel (includes side slopes)
  - Newark Bay Outside of Channel
  - Port Elizabeth Navigational Channel (includes side slopes)
  - Port Elizabeth Outside of Channel
  - Port Newark Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Outside of Channel
  - Hackensack River Navigational Channel (includes side slopes)
  - Hackensack River Outside of Channel
  - Kill Van Kull Outside of Channel

**Notes**

- 2,3,7,8-TCDD and Total TCDD surface concentrations represent the top 6 inches of the core.
- When duplicate 2,3,7,8-TCDD or Total TCDD values are provided, the average concentration is used in the ratio.
- No nondetect 2,3,7,8-TCDD or Total TCDD concentrations were reported in surface sediment samples.
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.





#### Legend

- Newark Bay Navigational Channel (includes side slopes; TSI 2005/2007)
- Port Elizabeth Navigational Channel (includes side slopes; TSI 2005/2007)
- Port Newark Navigational Channel (includes side slopes; TSI 2005/2007)
- Shooters Island and Arthur Kill Navigational Channel (includes side slopes; TSI 2005/2007)
- ▲ Lower Passaic River (MPI 2008)
- ▲ Upper Passaic River (MPI 2008)
- ◆ Lower Passaic River (ratio of raw data, assuming 2,3,7,8-TCDD and Total TCDD were both impacted during analysis; CPG 2008)

#### Notes

- 1- Newark Bay Phase 1 and Phase 2 surface sediment concentrations collected at highly likely recent depositional locations (defined as  $\geq 1$  pCi/g in the channel; 32 samples).
- 2- Lower Passaic River surface sediment concentrations collected at likely recent depositional locations (defined as  $\geq 0.5$  pCi/g in the channel; 9 samples).
- 3- Upper Passaic River surface sediment concentrations collected at likely recent depositional locations (defined as  $\geq 0.5$  pCi/g in the channel; 2 samples).
- 4- Lower Passaic River CPG 2008 surface sediment concentrations collected at highly likely recent depositional locations (defined as  $\geq 1$  pCi/g; 26 samples).



2,3,7,8-TCDD/Total TCDD Surface Sediment Ratios  
Newark Bay RI/FS Oversight

October 2010

Figure 6



## Legend

### Phase 1 - Benzo[a]pyrene (ug/kg)

- ◀ < 300.0
- ◀ 300.1 - 1,000.0
- ◀ 1,000.1 - 3,000.0
- ◀ 3,000.1 - 10,000.0
- ◀ > 10,000

### Phase 2 - Benzo[a]pyrene (ug/kg)

- ▶ < 300.0
- ▶ 300.1 - 1,000.0
- ▶ 1,000.1 - 3,000.0
- ▶ 3,000.1 - 10,000.0
- ▶ > 10,000

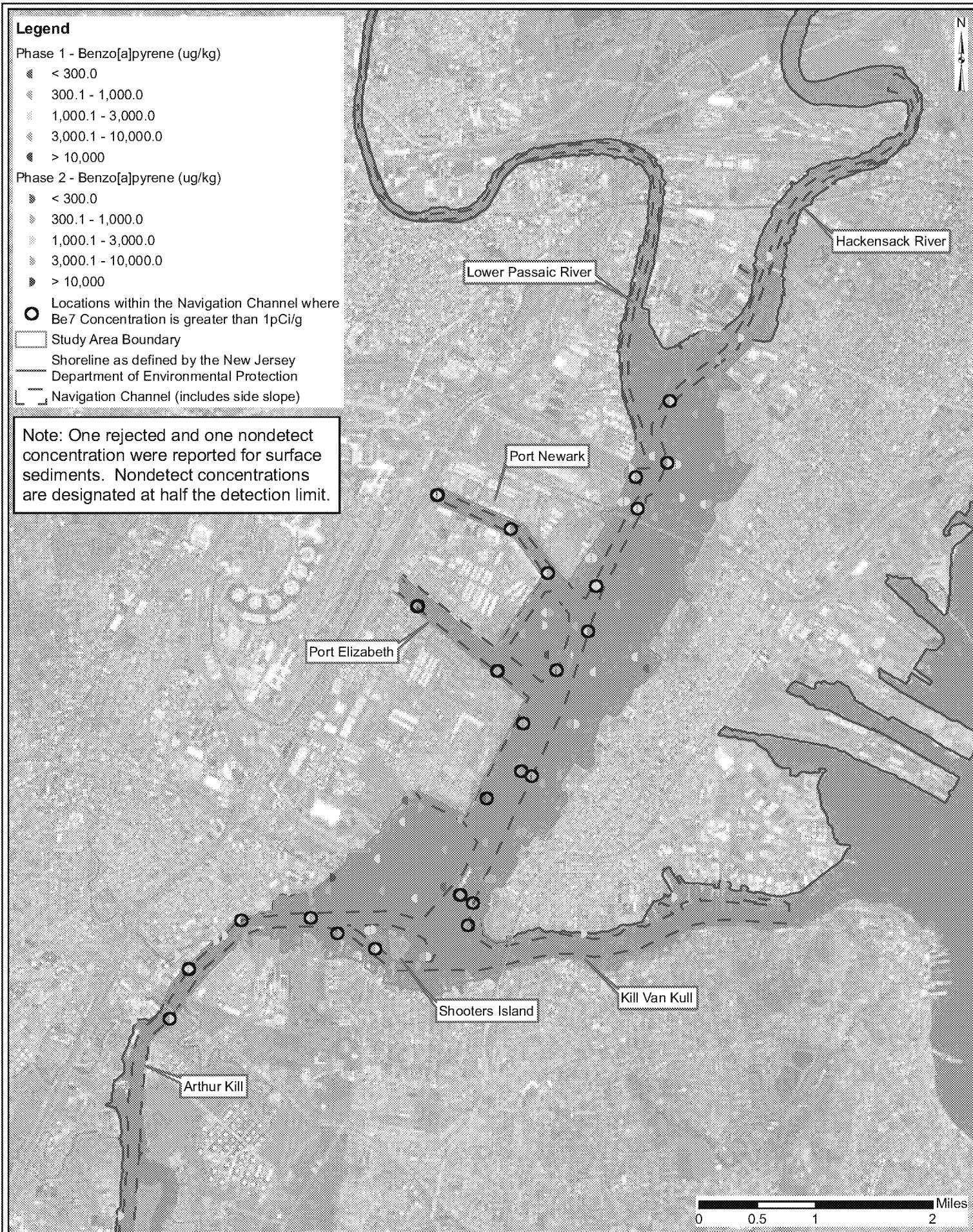
○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

□ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)

Note: One rejected and one nondetect concentration were reported for surface sediments. Nondetect concentrations are designated at half the detection limit.

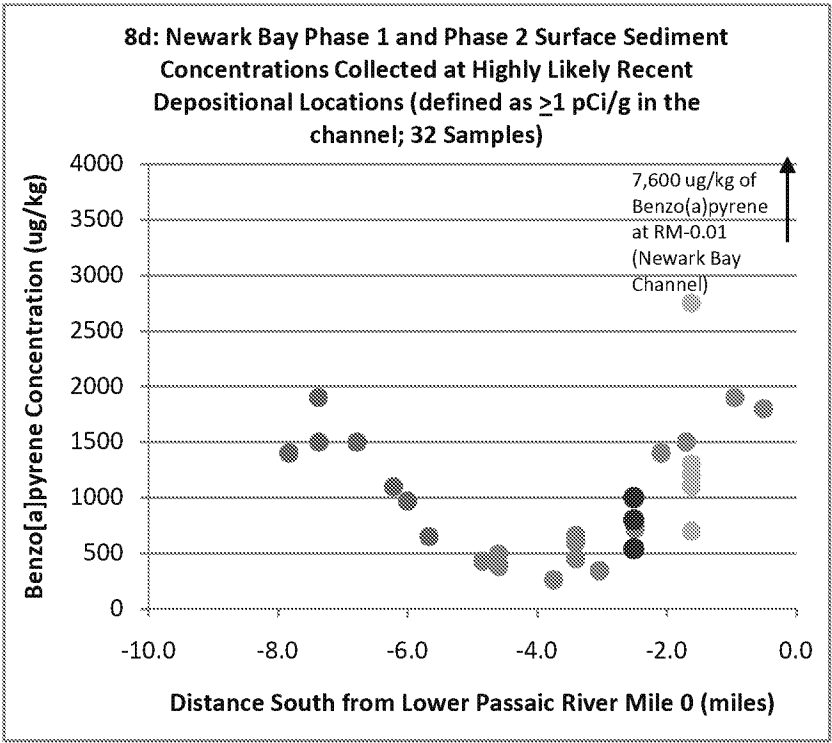
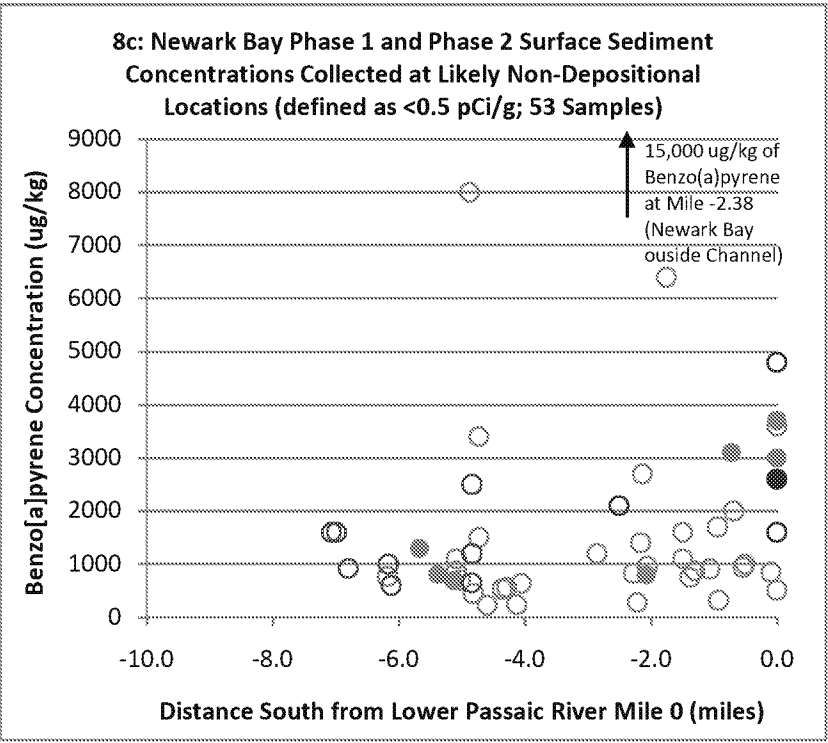
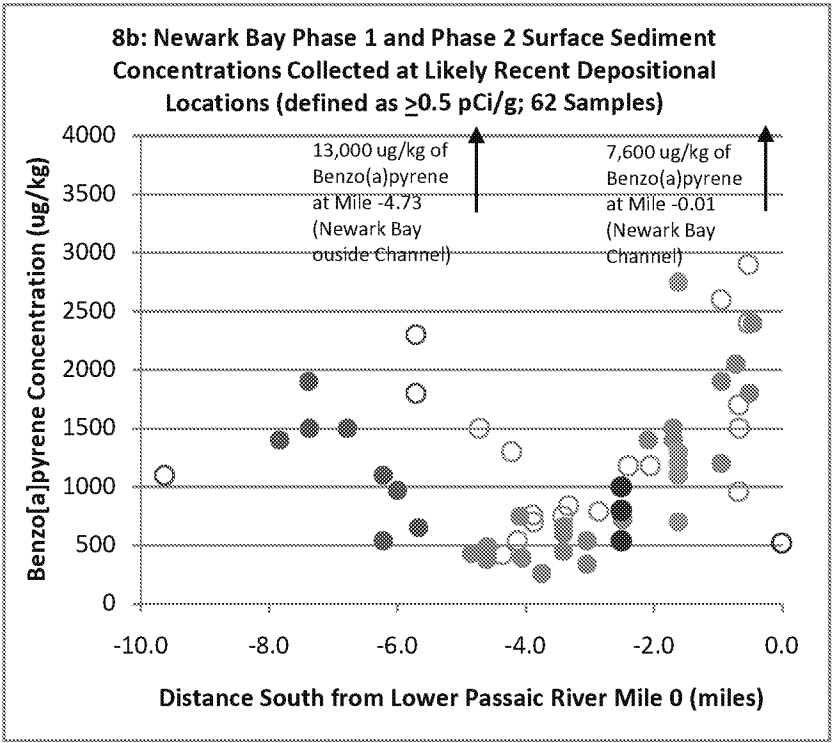
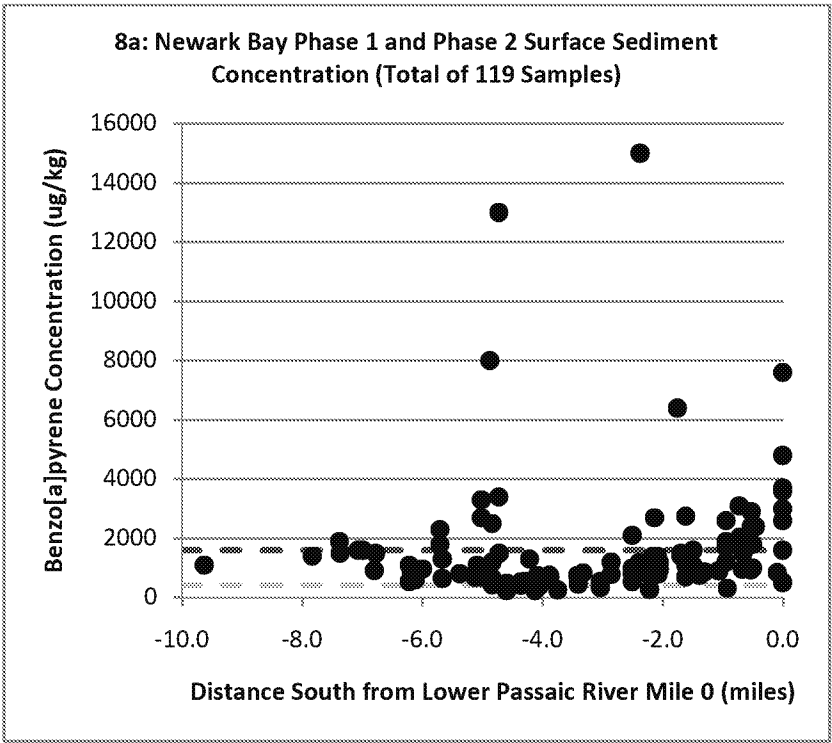


**Benzo[a]pyrene Concentration in Phase 1 and Phase 2 Surface Sediment (0-6 inch)**

*Newark Bay RI/FS Oversight*

Figure 7

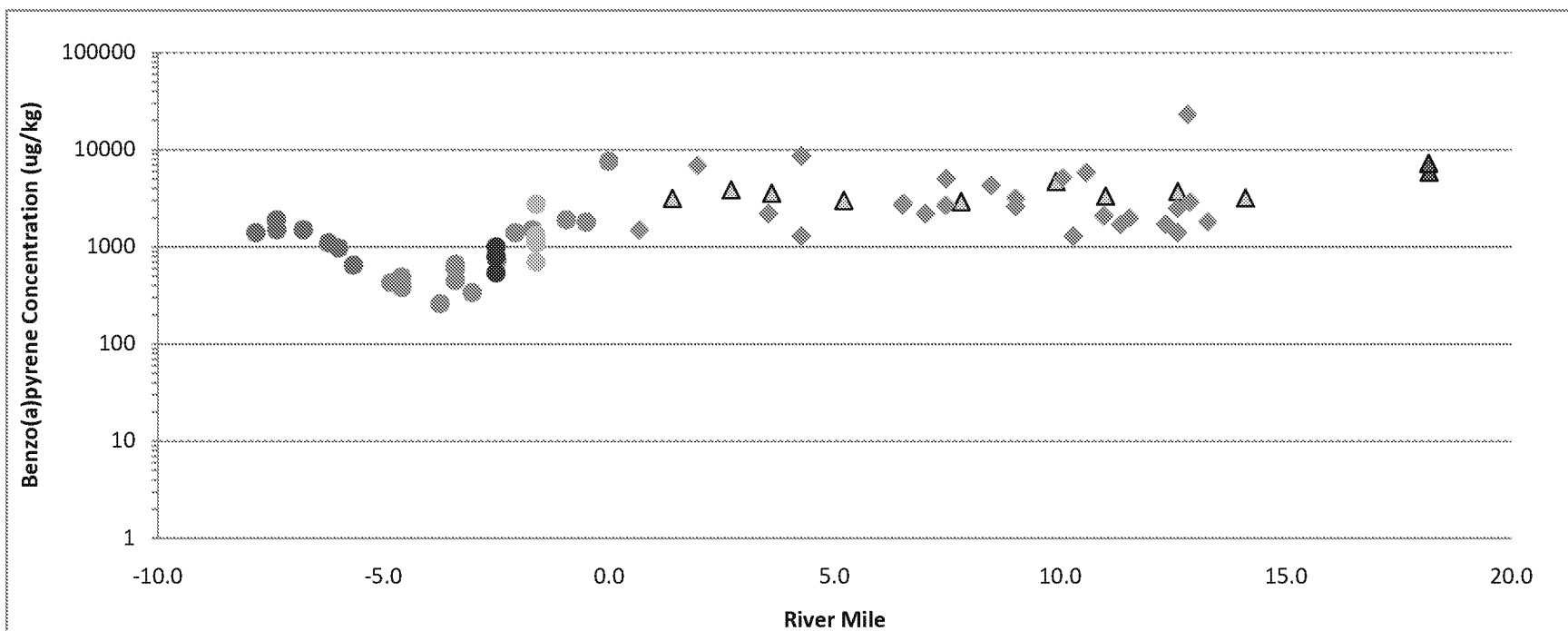
October 2010



**Legend**

- All Phase 1 and 2 Sampling Locations
- Newark Bay Navigational Channel (includes side slopes)
- Newark Bay Outside of Channel
- Port Elizabeth Navigational Channel (includes side slopes)
- Port Elizabeth Outside of Channel
- Port Newark Navigational Channel (includes side slopes)
- Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
- Shooters Island and Arthur Kill Outside of Channel
- Hackensack River Navigational Channel (includes side slopes)
- Hackensack River Outside of Channel
- Kill Van Kull Outside of Channel
- NJDEP Effects Range – Low
- NJDEP Effects Range - Medium

- Notes**
1. Benzo[a]pyrene surface concentrations represent the top 6 inches of the core.
  2. When duplicate benzo[a]pyrene values are provided by the laboratory, the average concentration is plotted.
  3. One rejected and one nondetect benzo[a]pyrene concentration were reported for surface sediments. Nondetect concentrations are presented at half the detection limit.
  4. Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
  5. Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.
  6. Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
  7. Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values are provided in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.



#### Legend

- Newark Bay Navigational Channel (includes side slopes; TSI 2005/2007)
- Port Elizabeth Navigational Channel (includes side slopes; TSI 2005/2007)
- Port Newark Navigational Channel (includes side slopes; TSI 2005/2007)
- Shooters Island and Arthur Kill Navigational Channel (includes side slopes; TSI 2005/2007)
- ▲ Lower Passaic River (MPI 2008)
- ▲ Upper Passaic River (MPI 2008)
- ◆ Lower Passaic River (CPG 2008)

#### Notes

- 1- Newark Bay Phase 1 and Phase 2 surface sediment concentrations collected at highly likely recent depositional locations (defined as  $\geq 1$  pCi/g in the channel; 31 samples).
- 2- Lower Passaic River surface sediment concentrations collected at likely recent depositional locations (defined as  $\geq 0.5$  pCi/g in the channel; 9 samples).
- 3- Upper Passaic River surface sediment concentrations collected at likely recent depositional locations (defined as  $\geq 0.5$  pCi/g in the channel; 2 samples).
- 4- Lower Passaic River CPG 2008 surface sediment concentrations collected at highly likely recent depositional locations (defined as  $\geq 1$  pCi/g; 26 samples).
- 5- All nondetect concentrations are presented at half the detection limit and rejected concentrations are not represented on the plot.



Benzo(a)pyrene Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

October 2010

Figure 9

## Legend

### Phase 1 - Total LMW PAH (mg/kg)

- ◀ < 1.0
- ◀ 1.1 - 3.0
- ◀ 3.1 - 10.0
- ◀ 10.1 - 30.0
- ◀ > 30.0

### Phase 2 - Total LMW PAH (mg/kg)

- ▶ < 1.00
- ▶ 1.01 - 2.79
- ▶ 2.80 - 3.90
- ▶ 3.91 - 30.00
- ▶ > 30.00

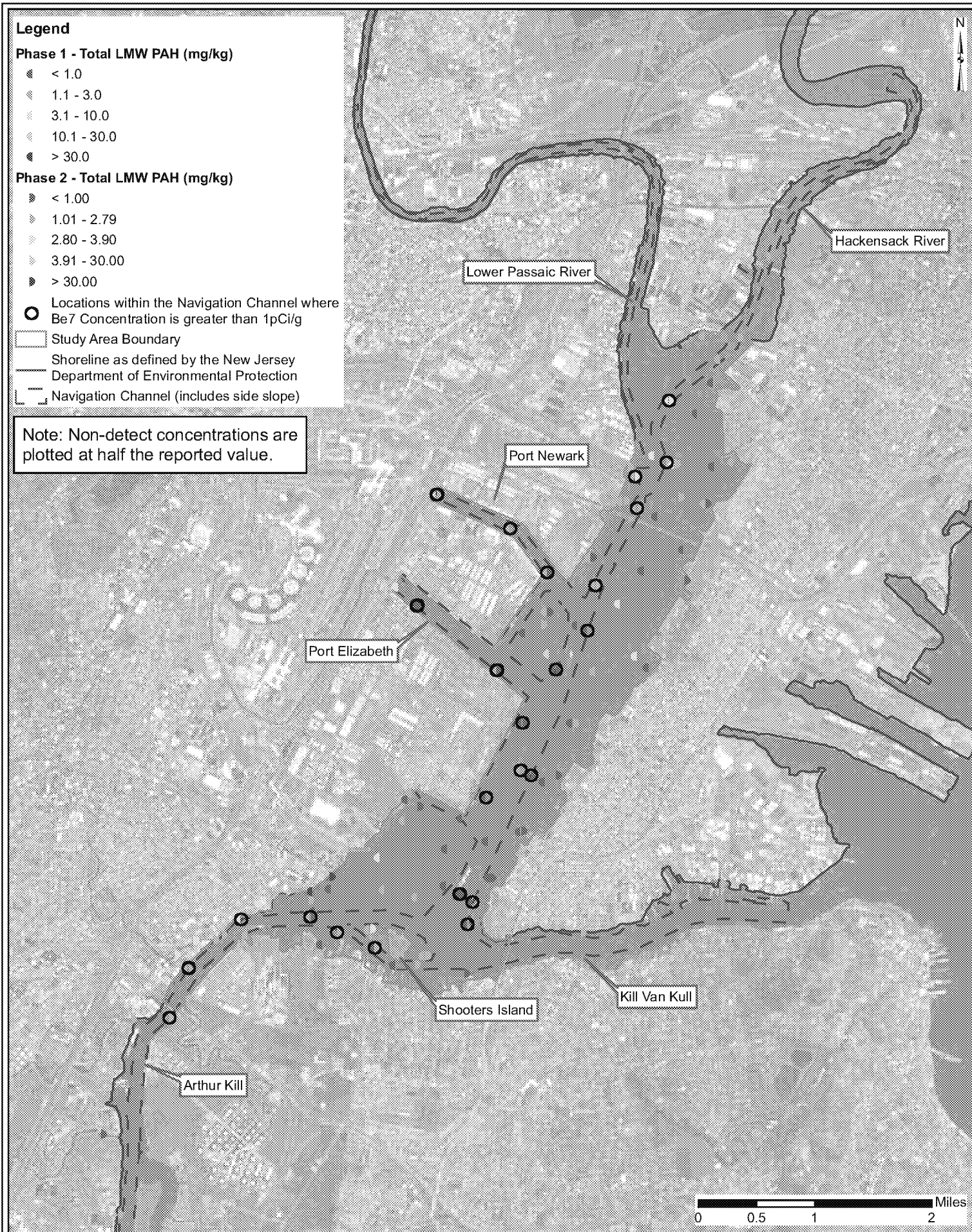
○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

□ Study Area Boundary

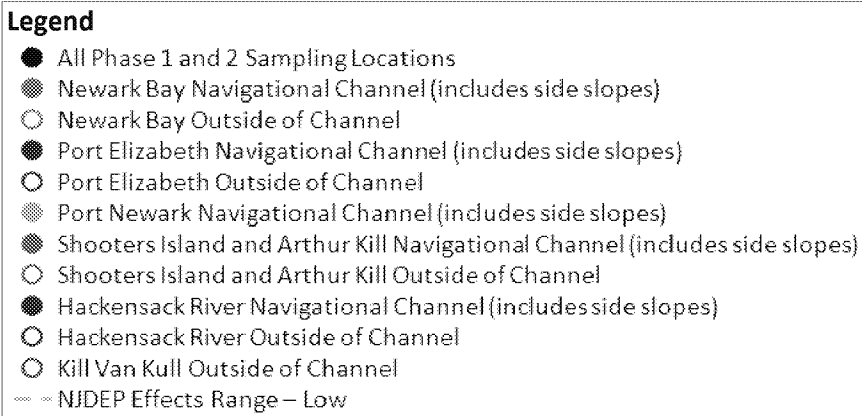
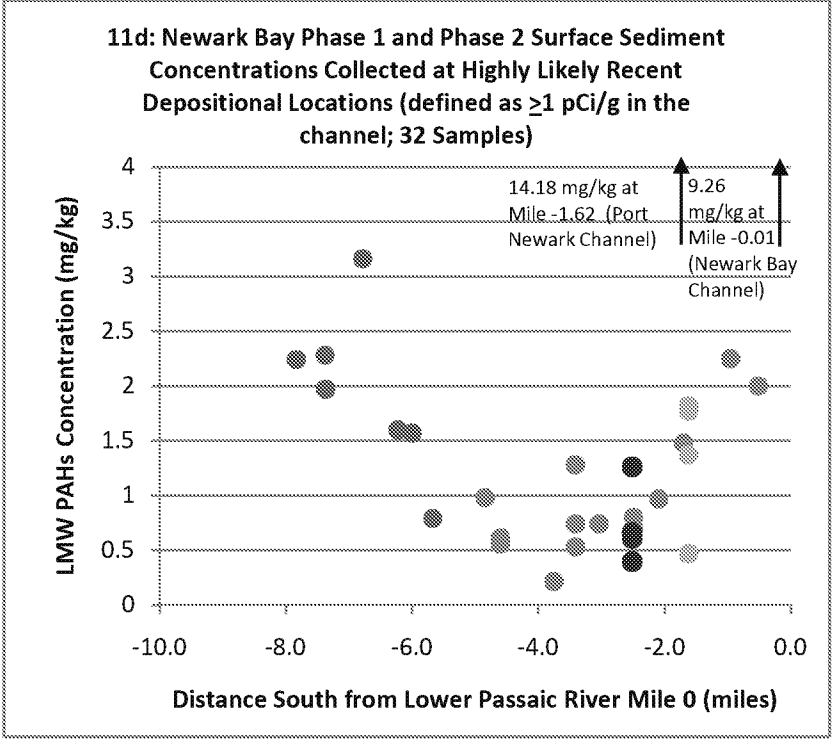
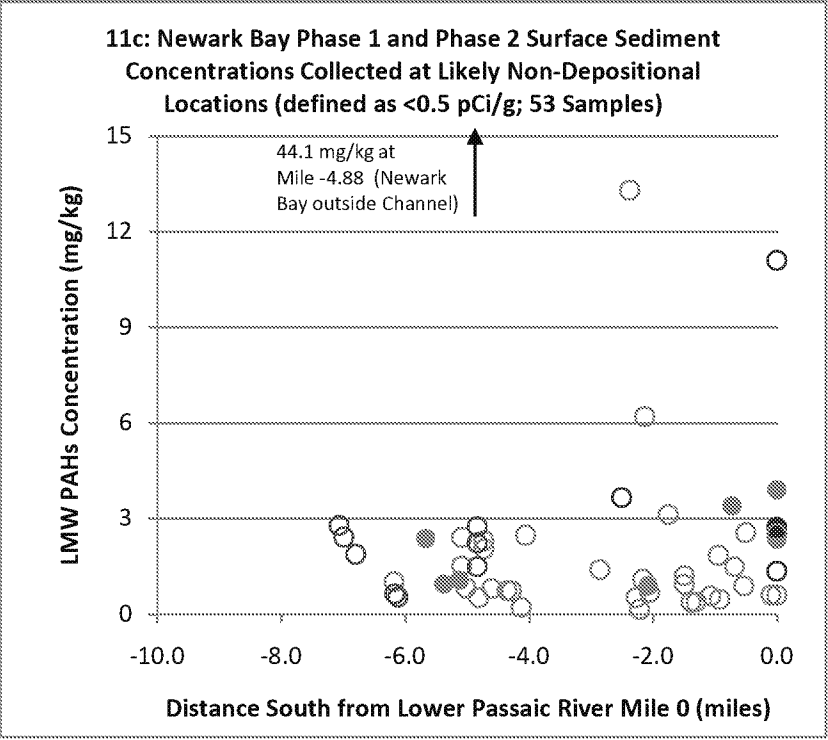
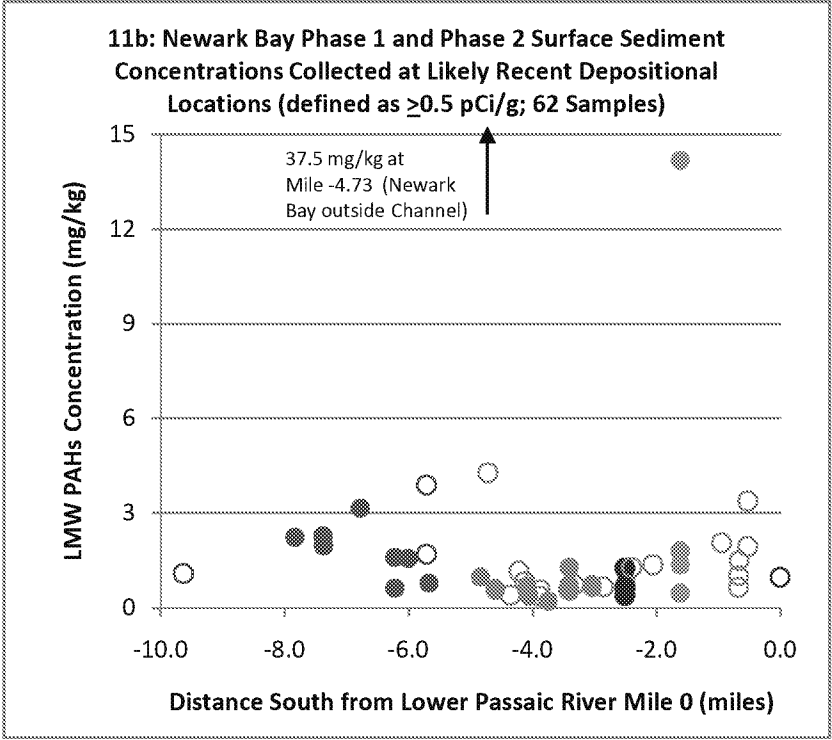
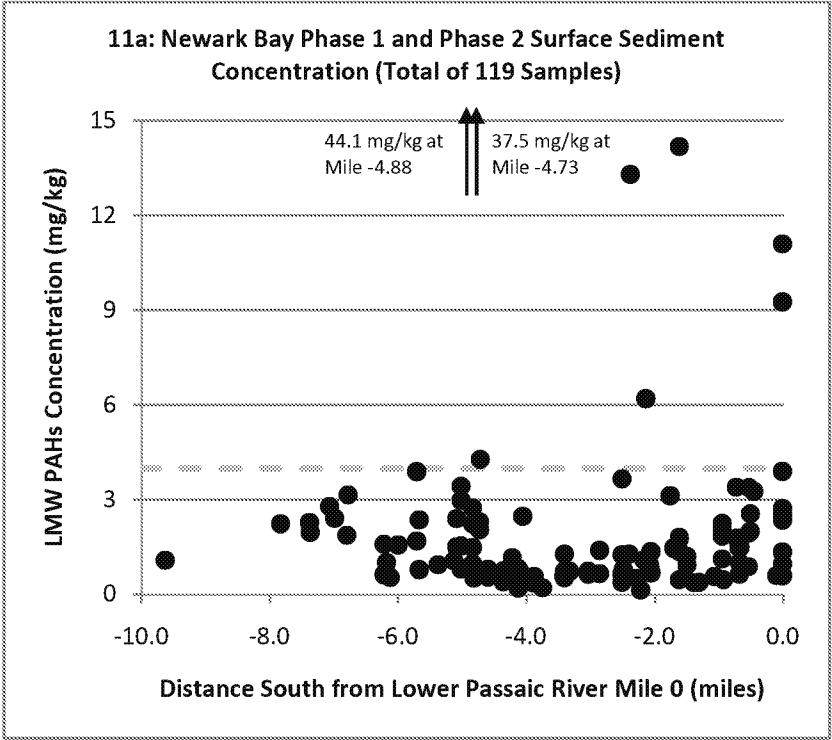
— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)

Note: Non-detect concentrations are plotted at half the reported value.







- Notes**
- Low molecular weight PAHs surface concentrations represent the top 6 inches of the core.
  - When duplicate low molecular weight PAHs values were provided by the laboratory, the average concentration is plotted.
  - Four nondetect low molecular weight PAHs concentrations were reported for surface sediments. Nondetect concentrations are presented as half the sample result value.
  - Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
  - Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile -1.62, and Port Elizabeth plots at Mile -2.51.
  - Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
  - Effects Range - Low (ER-L) values are provided in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.
  - Low molecular weight PAH concentrations represent laboratory reported totals.
  - LMW = Low Molecular Weight

## Legend

### Phase 1 - Total HMW PAH (mg/kg)

- ◀ < 3.0
- ◀ 3.1 - 10.0
- ◀ 10.1 - 30.0
- ◀ 30.1 - 100.0
- ◀ > 100.0

### Phase 2 - Total HMW PAH (mg/kg)

- ▶ < 3.0
- ▶ 3.1 - 10.0
- ▶ 10.1 - 30.0
- ▶ 30.1 - 100.0
- ▶ > 100.0

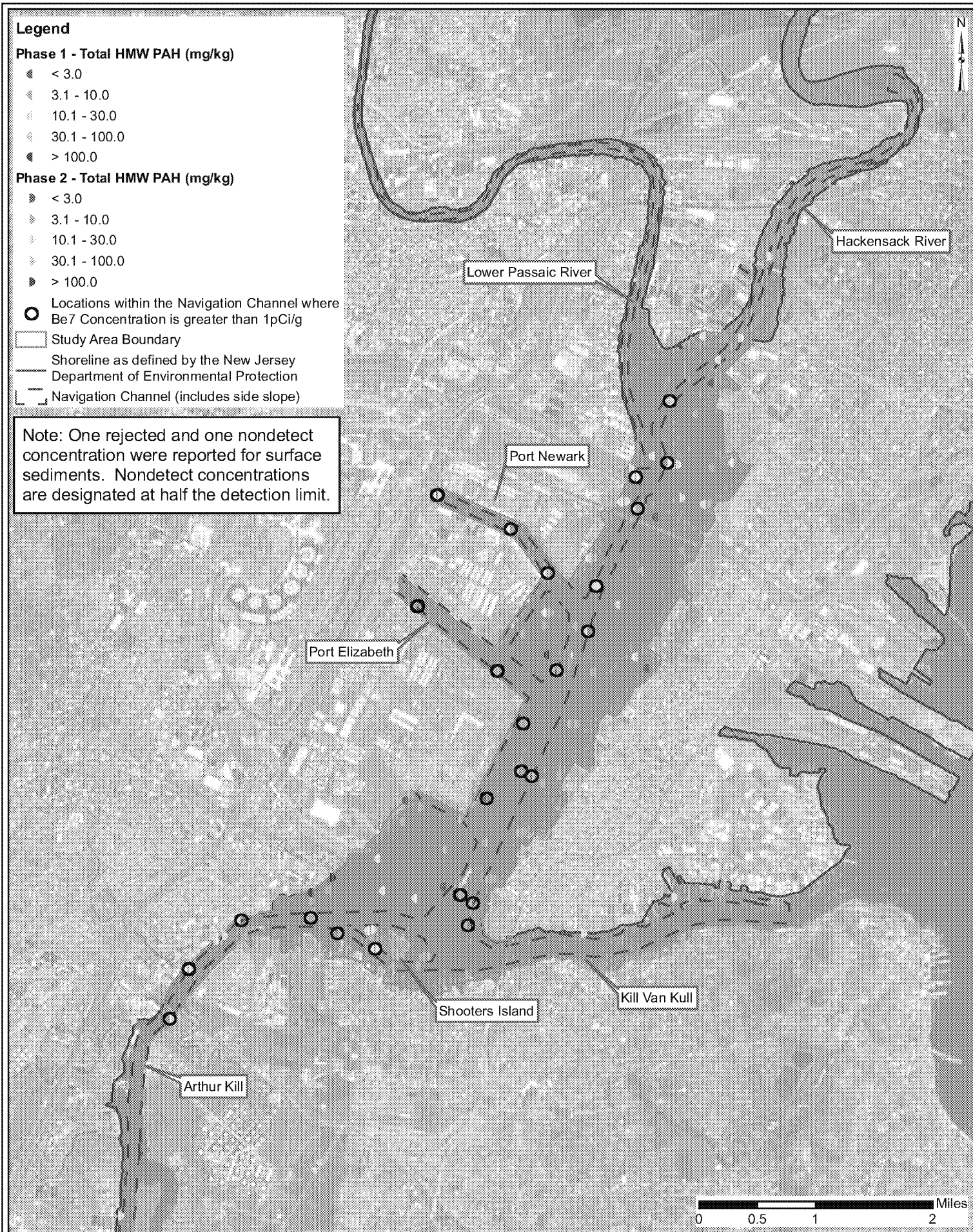
○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

□ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)

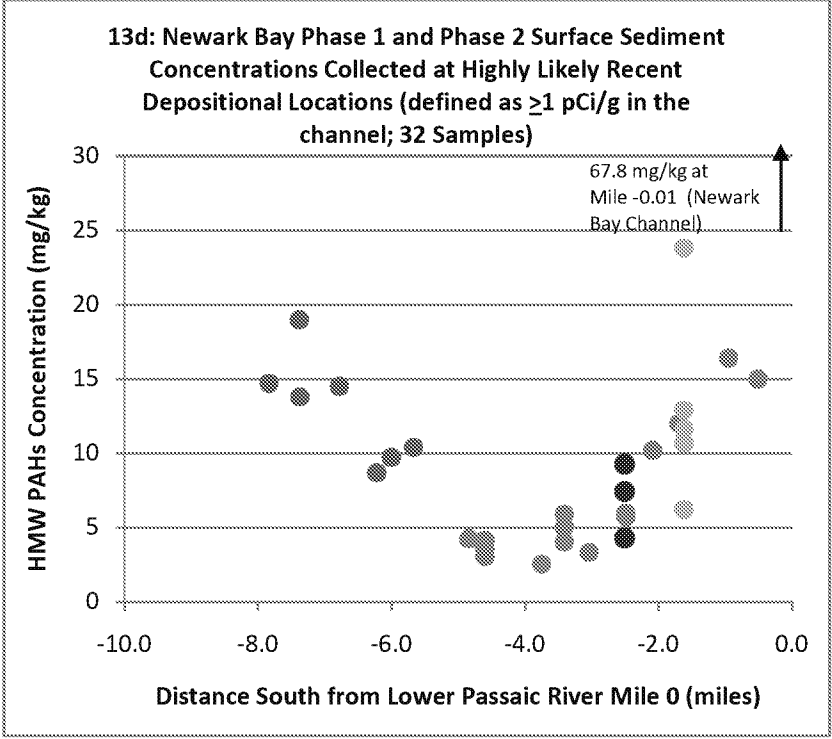
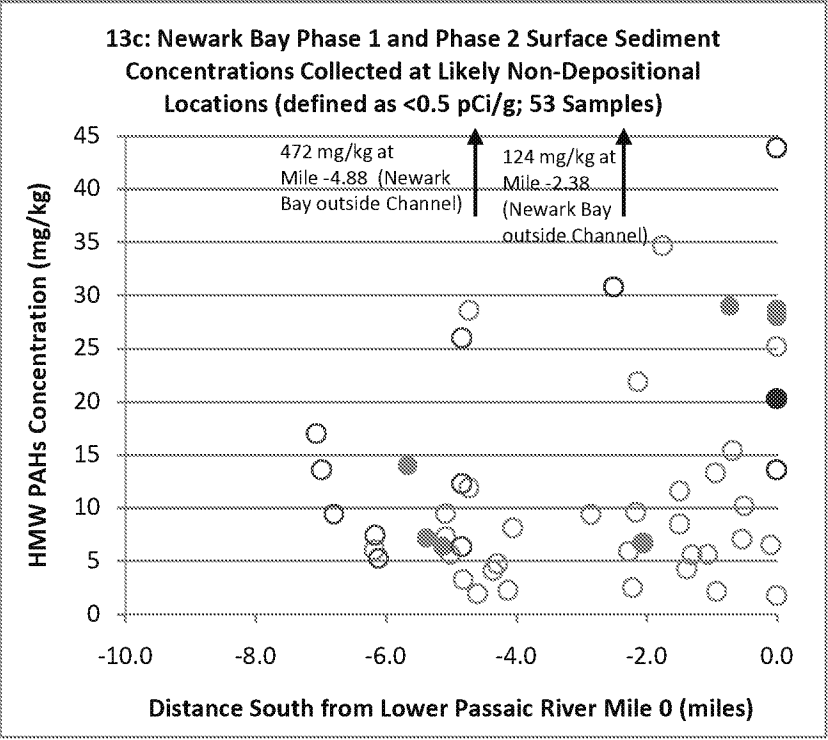
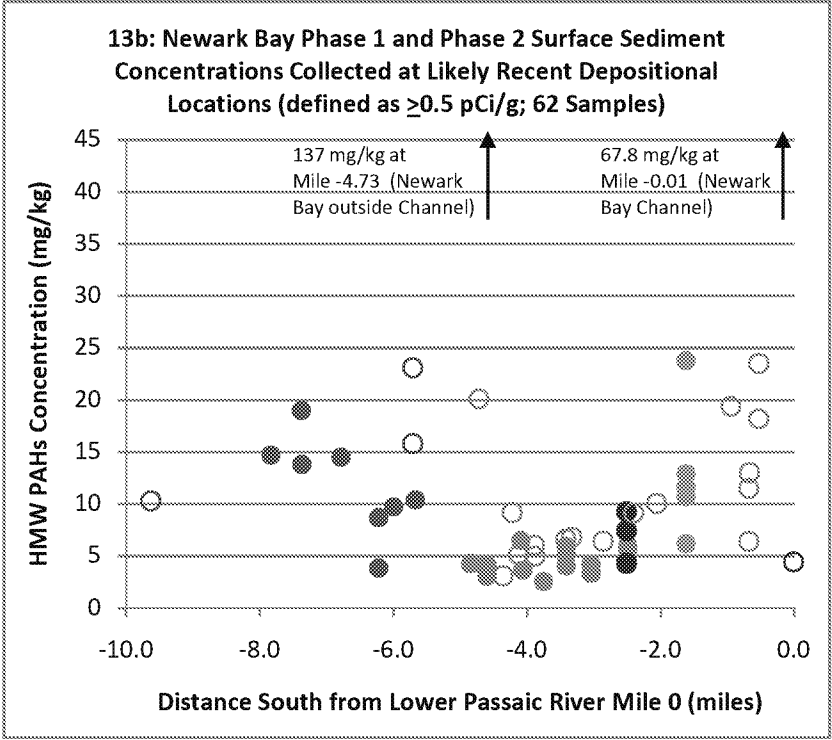
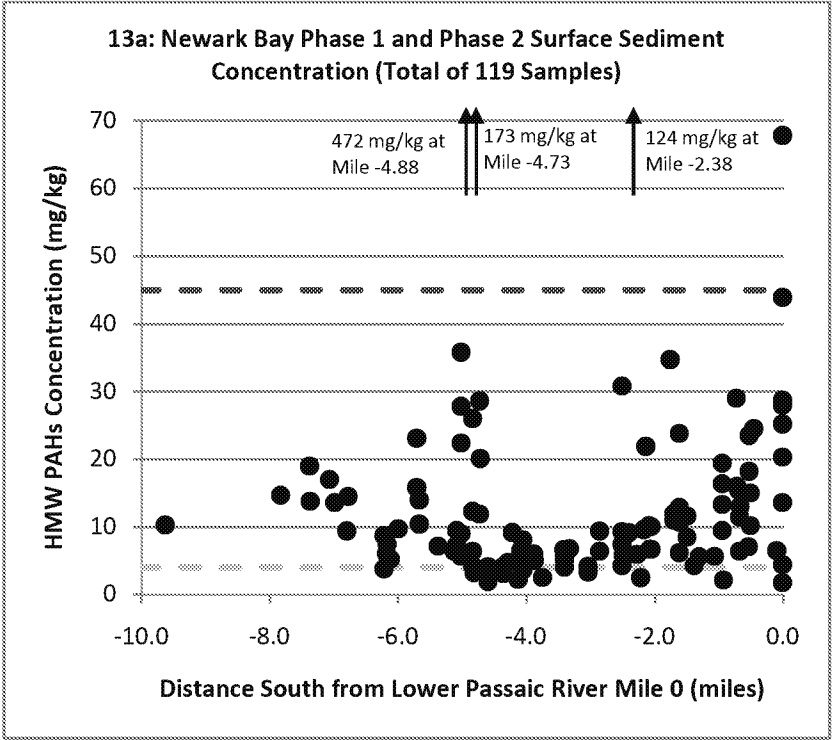
Note: One rejected and one nondetect concentration were reported for surface sediments. Nondetect concentrations are designated at half the detection limit.



**High Molecular Weight PAHs Concentration in Phase 1 and Phase 2**  
**Surface Sediment (0-6 inch)**  
**Newark Bay RI/FS Oversight**

Figure 12

October 2010



**Legend**

- All Phase 1 and 2 Sampling Locations
- Newark Bay Navigational Channel (includes side slopes)
- Newark Bay Outside of Channel
- Port Elizabeth Navigational Channel (includes side slopes)
- Port Elizabeth Outside of Channel
- Port Newark Navigational Channel (includes side slopes)
- Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
- Shooters Island and Arthur Kill Outside of Channel
- Hackensack River Navigational Channel (includes side slopes)
- Hackensack River Outside of Channel
- Kill Van Kull Outside of Channel
- NJDEP Effects Range - Low
- NJDEP Effects Range - Medium

- Notes**
- High molecular weight PAHs surface concentrations represent the top 6 inches of the core.
  - When duplicate high molecular weight PAHs values are provided by the laboratory, the average concentration is plotted.
  - One rejected and one nondetect high molecular weight PAHs concentration were reported for surface sediments. Nondetect concentrations are presented at half the detection limit.
  - Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source crackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
  - Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.
  - Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
  - Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values are provided in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.
  - High molecular weight PAH concentrations represent laboratory reported totals.
  - HMW = High Molecular Weight

## Legend

### Phase 1 - Total PCB (mg/kg)

- ◀ < 0.10
- ◀ 0.11 - 0.30
- ◀ 0.31 - 1.00
- ◀ 1.01 - 3.00
- ◀ > 3.00

### Phase 2 - Total PCB (mg/kg)

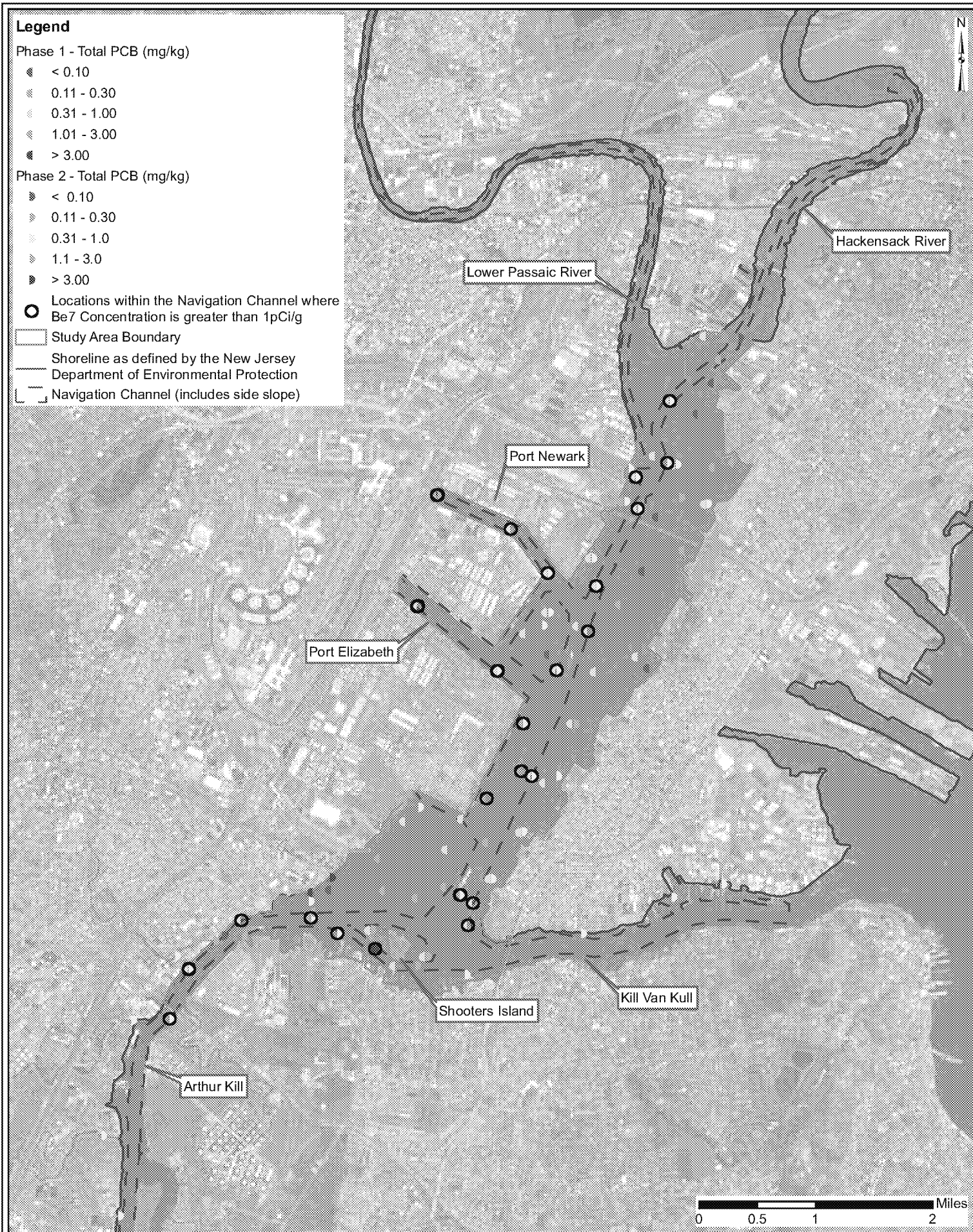
- ▶ < 0.10
- ▶ 0.11 - 0.30
- ▶ 0.31 - 1.0
- ▶ 1.1 - 3.0
- ▶ > 3.00

○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

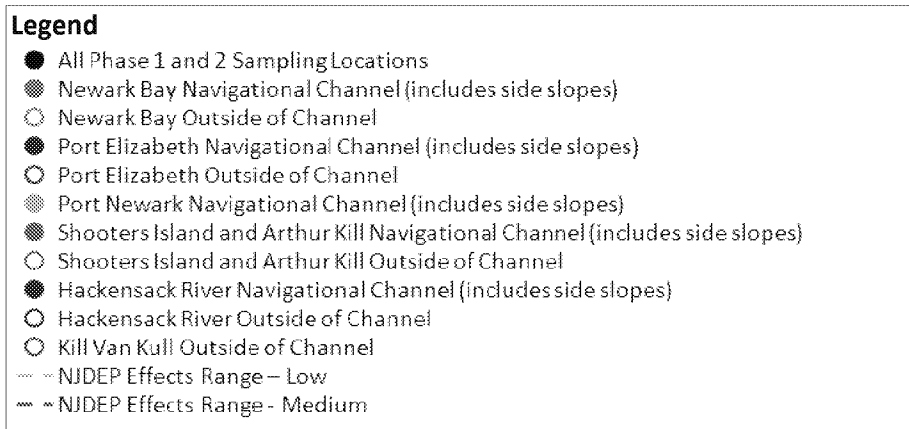
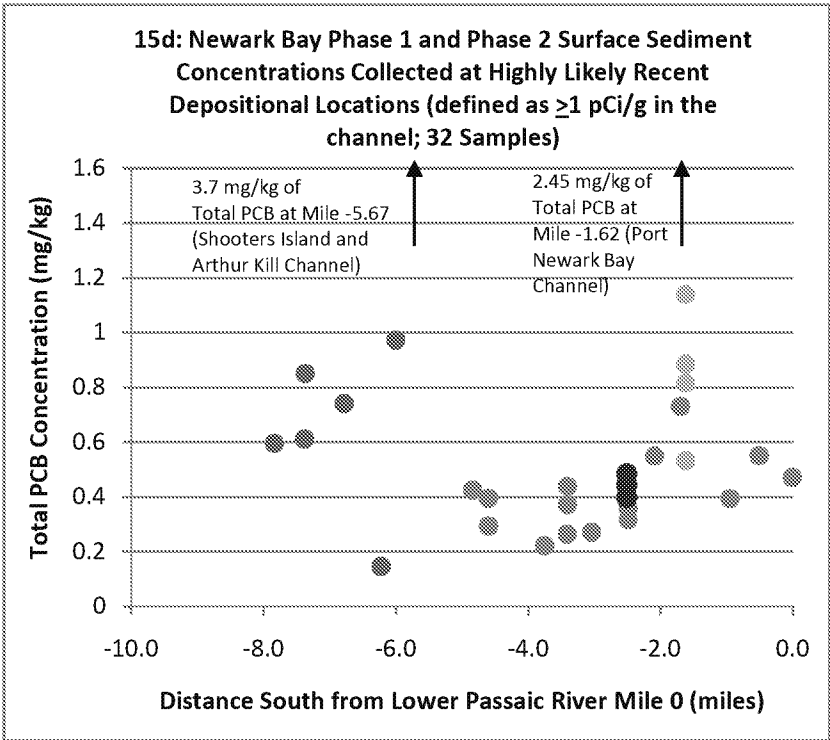
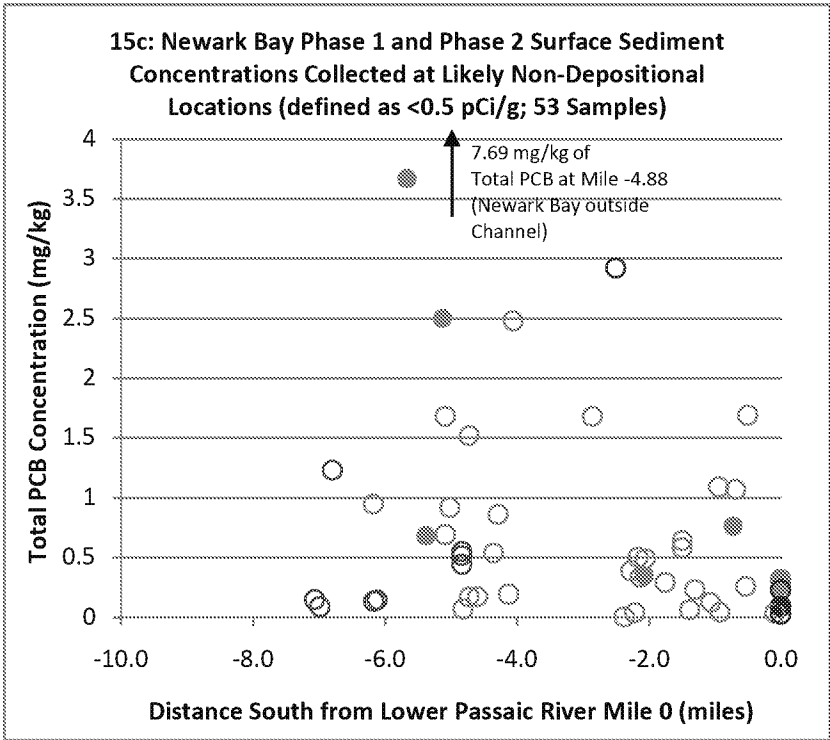
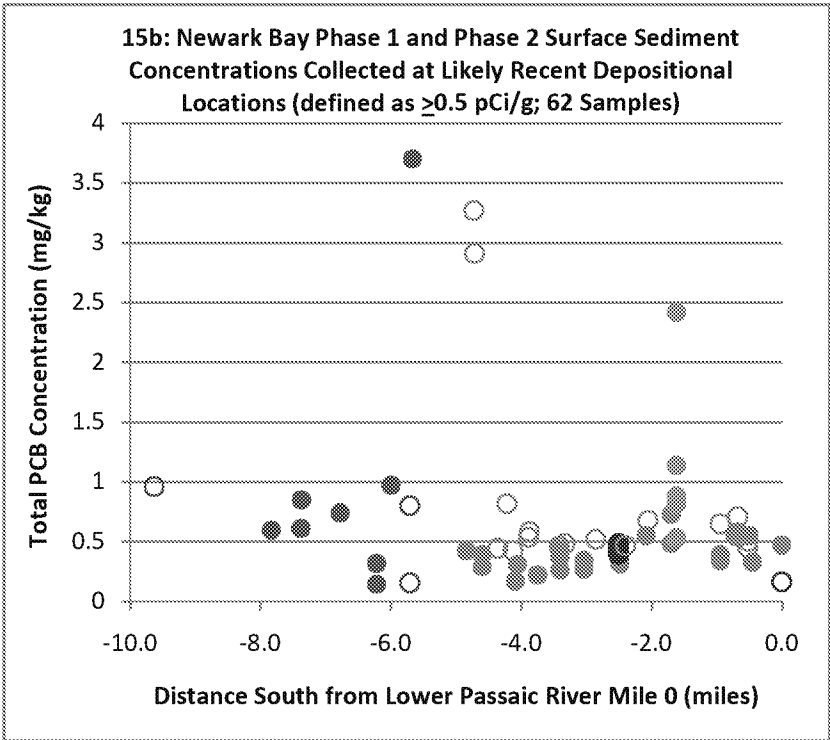
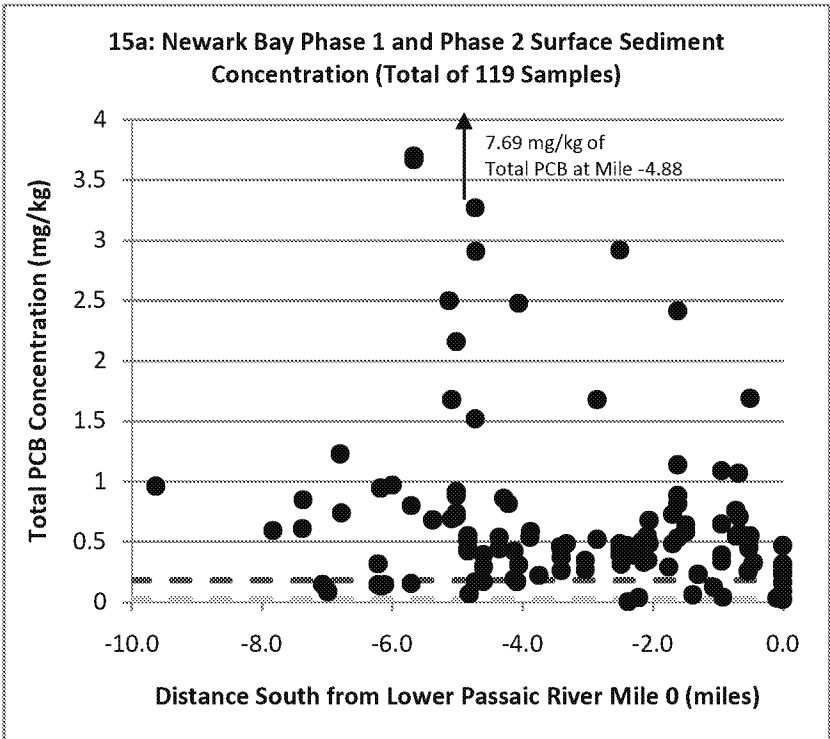
□ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)

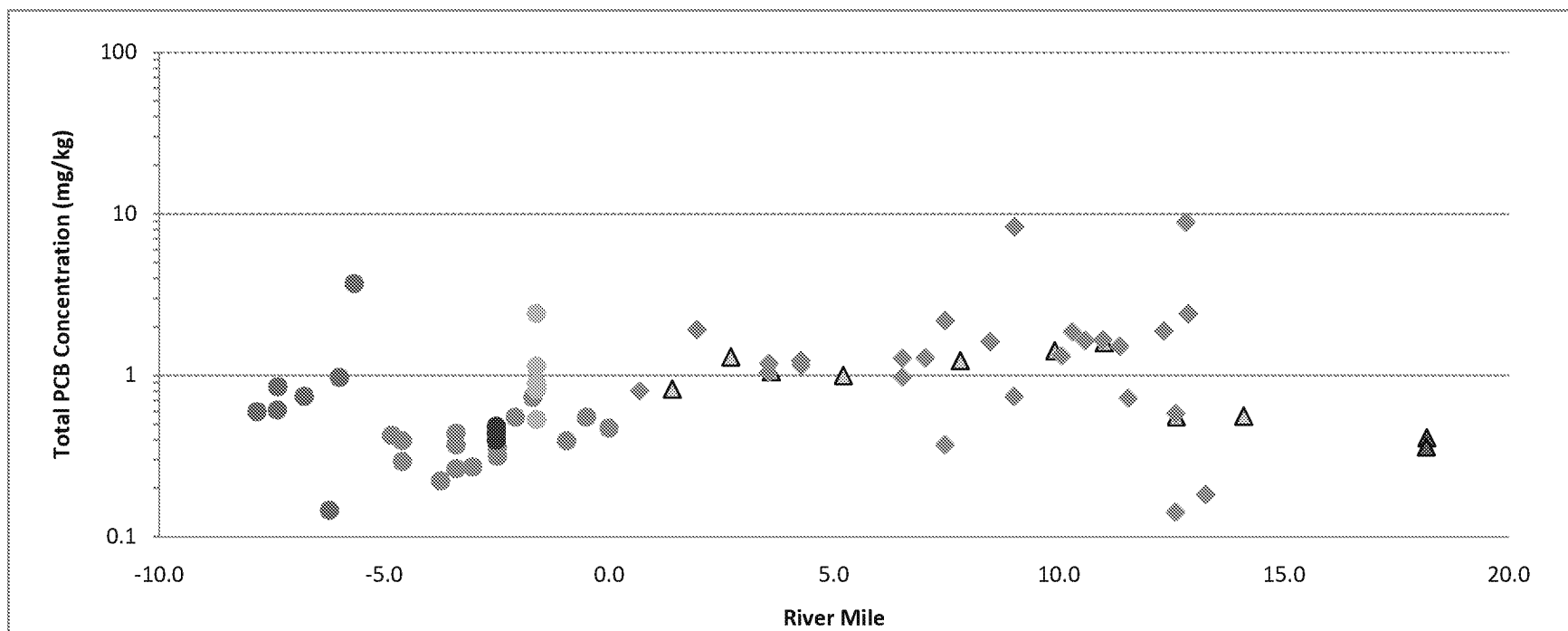






**Notes**

1. Total PCB surface concentrations represent the top 6 inches of the core.
2. When duplicate Total PCB values are provided by the laboratory, the average concentration is plotted.
3. No nondetect Total PCB concentrations were reported in surface sediment samples.
4. Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
5. Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.
6. Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
7. Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values are provided in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.



#### Legend

- Newark Bay Navigational Channel (includes side slopes; TSI 2005/2007)
- Port Elizabeth Navigational Channel (includes side slopes; TSI 2005/2007)
- Port Newark Navigational Channel (includes side slopes; TSI 2005/2007)
- Shooters Island and Arthur Kill Navigational Channel (includes side slopes; TSI 2005/2007)
- ▲ Lower Passaic River (MPI 2008)
- ▲ Upper Passaic River (MPI 2008)
- ◆ Lower Passaic River (CPG 2008)

#### Notes

- 1- Newark Bay Phase 1 and Phase 2 surface sediment concentrations collected at highly likely recent depositional locations (defined as  $\geq 1$  pCi/g in the channel; 32 samples).
- 2- Lower Passaic River surface sediment concentrations collected at likely recent depositional locations (defined as  $\geq 0.5$  pCi/g in the channel; 9 samples).
- 3- Upper Passaic River surface sediment concentrations collected at likely recent depositional locations (defined as  $\geq 0.5$  pCi/g in the channel; 2 samples).
- 4- Lower Passaic River CPG 2008 surface sediment concentrations collected at highly likely recent depositional locations (defined as  $\geq 1$  pCi/g; 26 samples).



Total PCB Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

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Figure 16

## Legend

### Phase 1 - PCB11 (mg/kg)

- ◀ < 0.0003
- ◀ 0.0004 - 0.0010
- ◀ 0.0011 - 0.0030
- ◀ 0.0031 - 0.0100
- ◀ 0.0101 - 0.0300
- ◀ > 0.03

### Phase 2 - PCB11 (mg/kg)

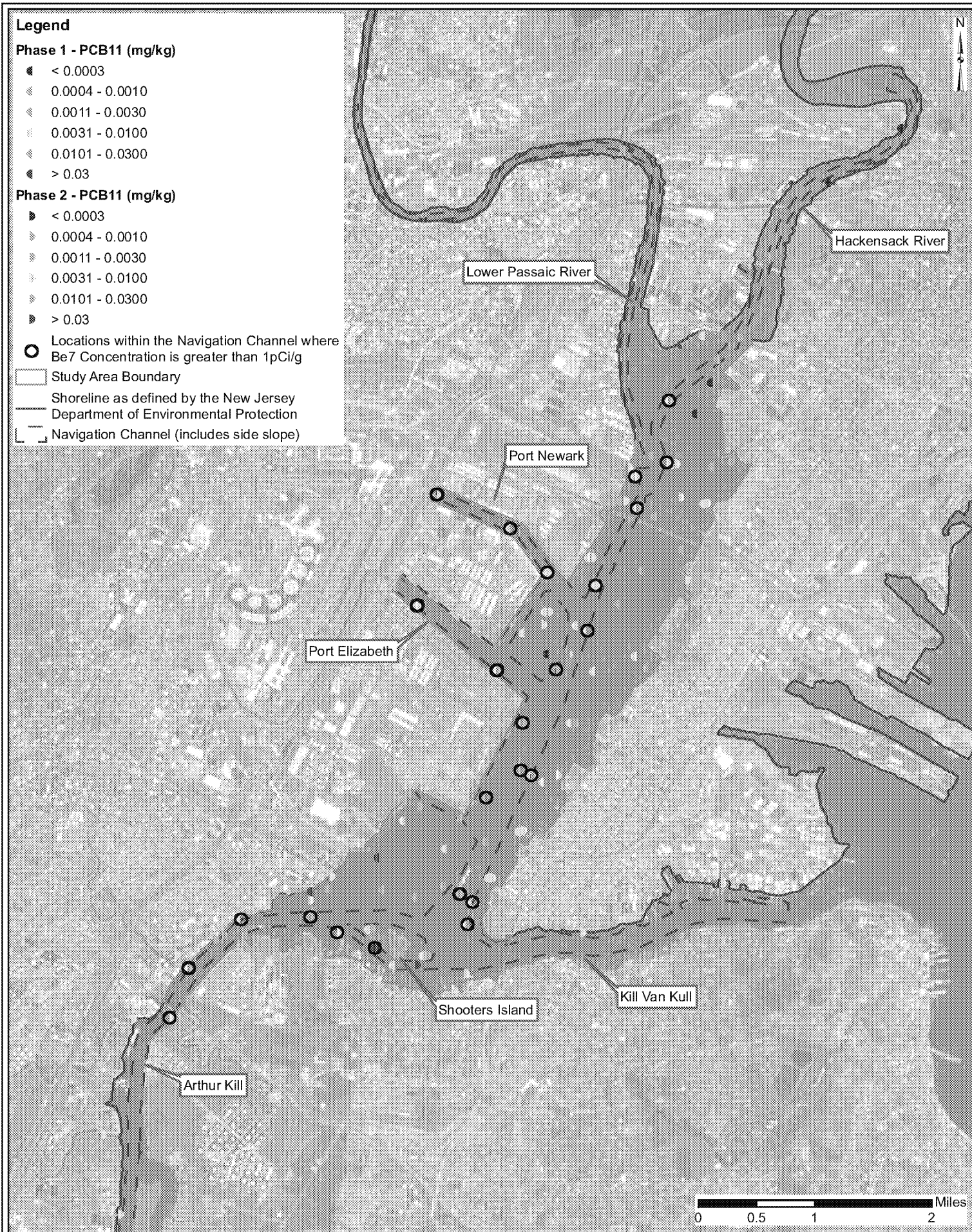
- ▶ < 0.0003
- ▶ 0.0004 - 0.0010
- ▶ 0.0011 - 0.0030
- ▶ 0.0031 - 0.0100
- ▶ 0.0101 - 0.0300
- ▶ > 0.03

○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

□ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)



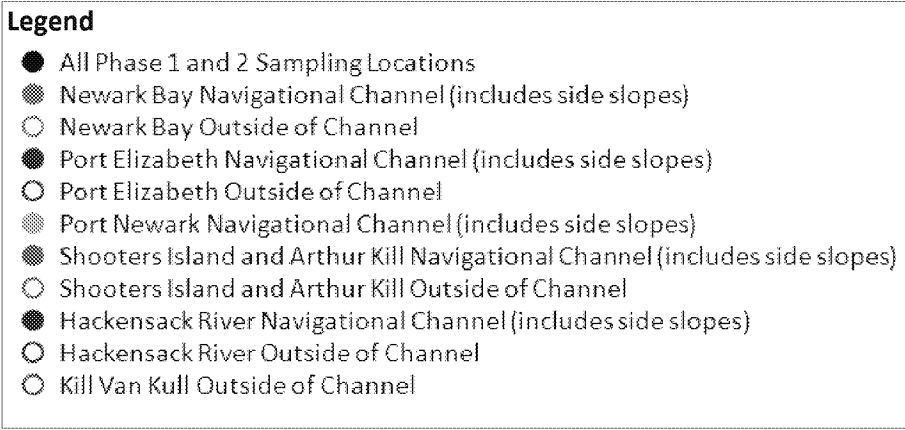
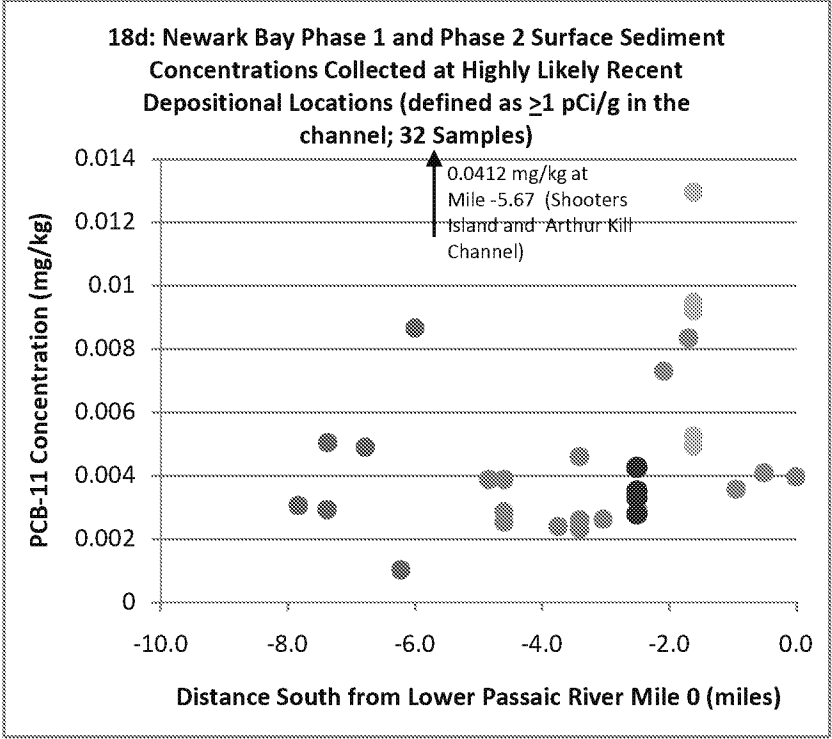
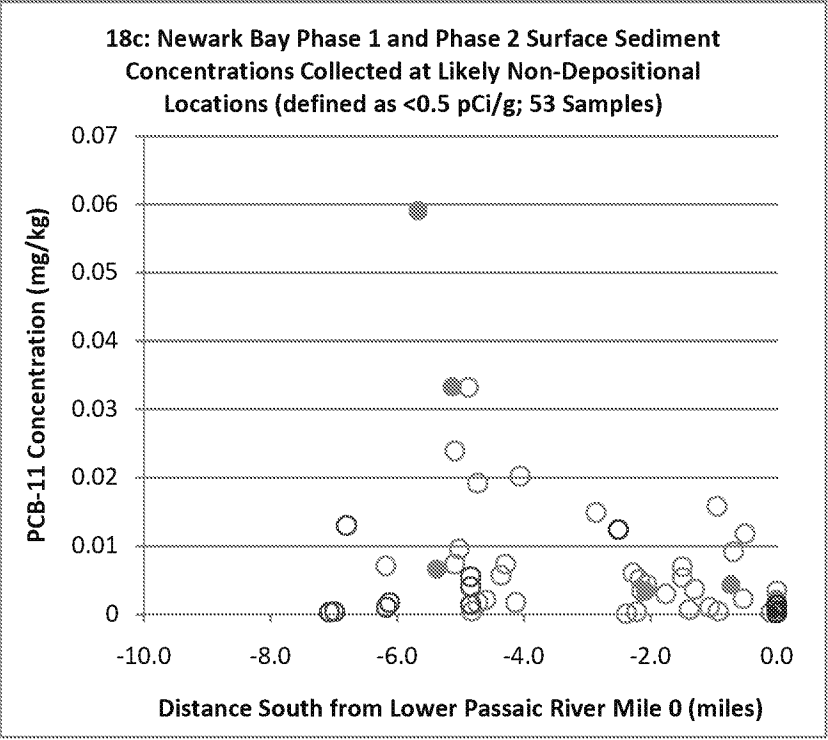
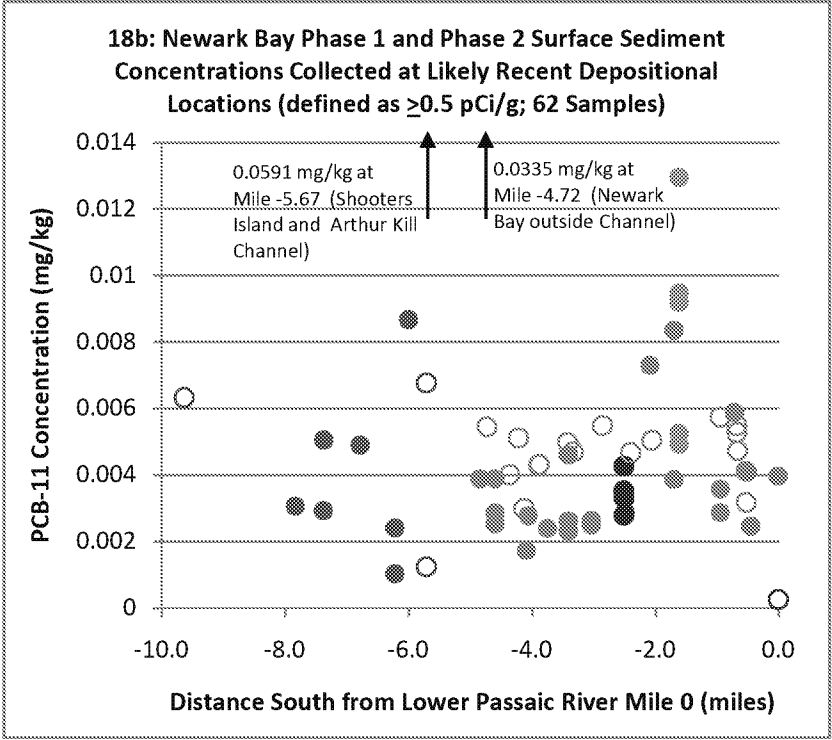
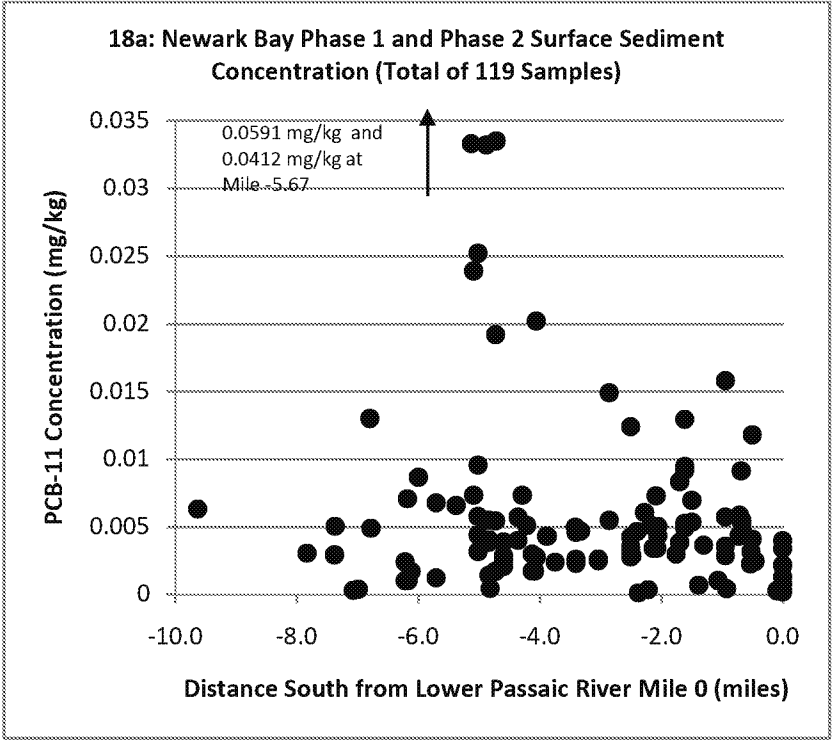
PCB11 Concentration in Phase 1 and Phase 2 Surface Sediment (0-6 inch)

Newark Bay RI/FS Oversight

Figure 17

October 2010





**Notes**

1. PCB-11 surface concentrations represent the top 6 inches of the core.

2. When duplicate PCB-11 values are provided by the laboratory, the average concentration is plotted.

3. No nondetect PCB-11 concentrations were reported in surface sediment samples.

4. Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.

5. Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile -1.62, and Port Elizabeth plots at Mile -2.51.

6. Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.

7. Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values for PCB-11 are not available in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.



## Legend

### Phase 1 - Total Tri-PCB (mg/kg)

- ◀ < 0.010
- ◀ 0.011 - 0.030
- ◀ 0.031 - 0.100
- ◀ 0.101 - 0.300
- ◀ > 0.3

### Phase 2 - Total Tri-PCB (mg/kg)

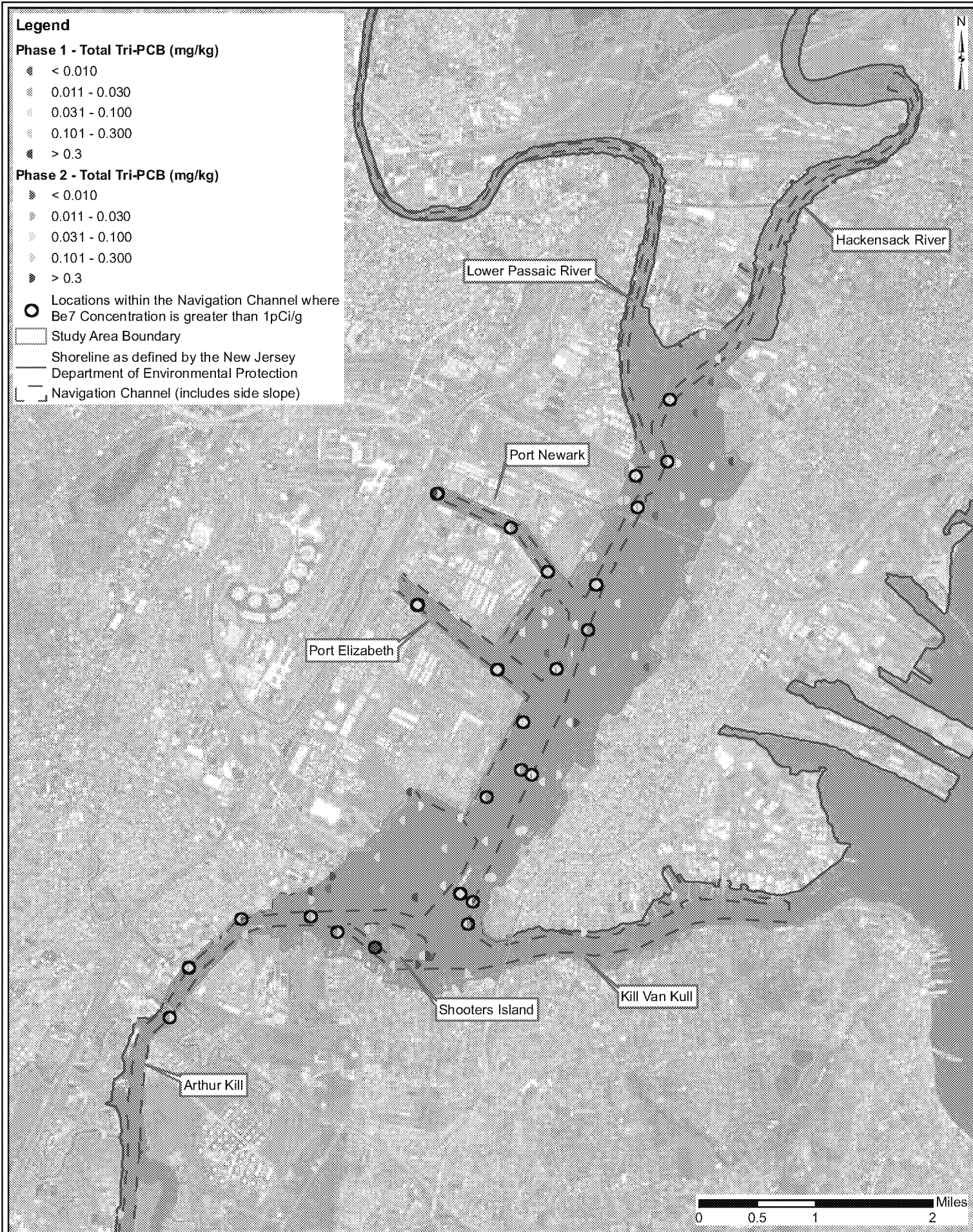
- ▶ < 0.010
- ▶ 0.011 - 0.030
- ▶ 0.031 - 0.100
- ▶ 0.101 - 0.300
- ▶ > 0.3

○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

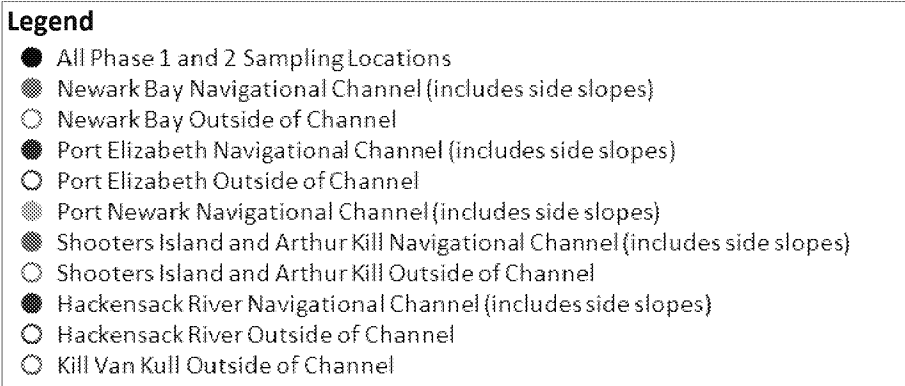
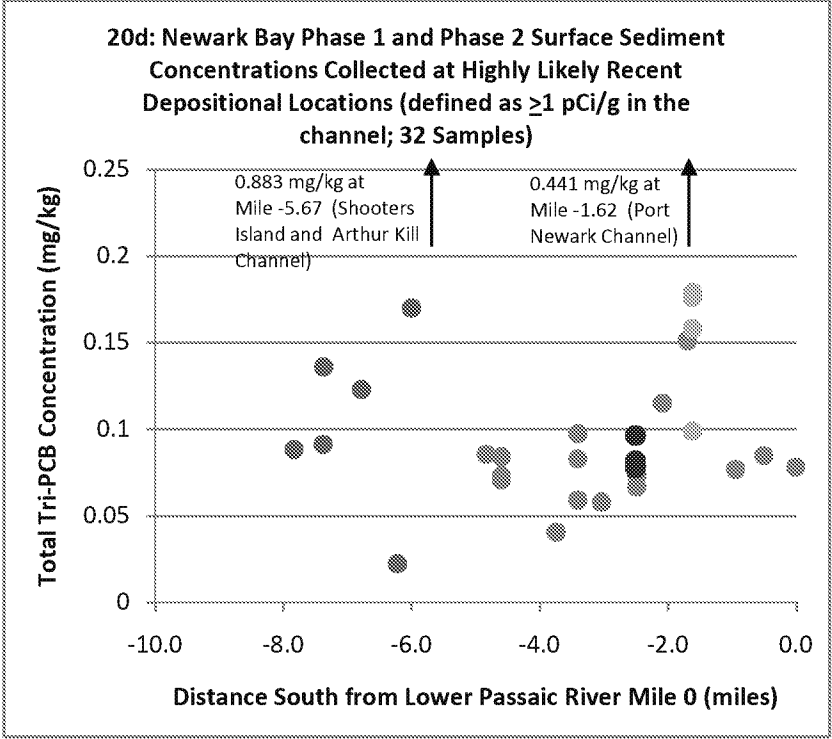
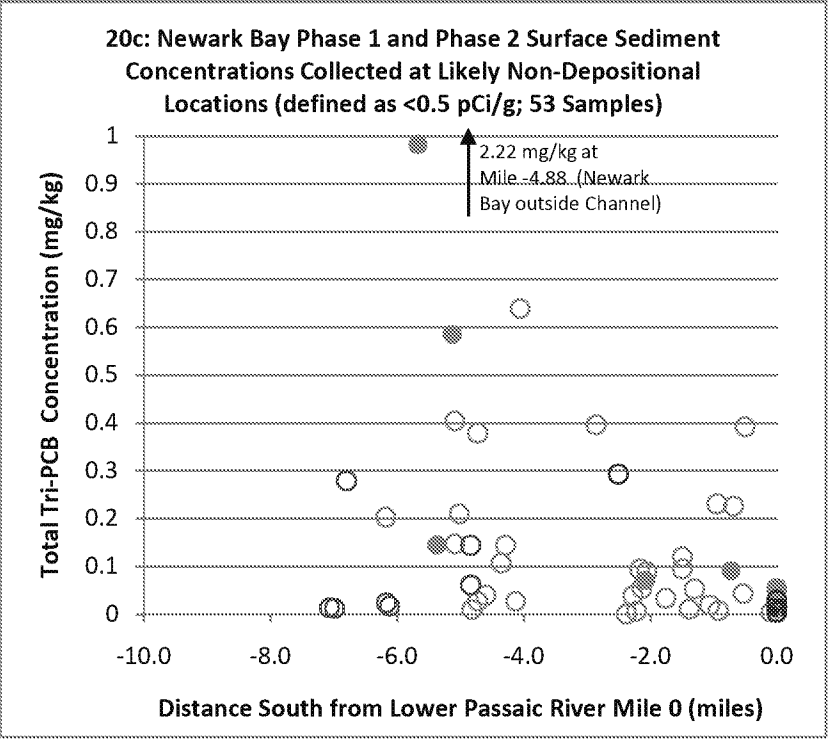
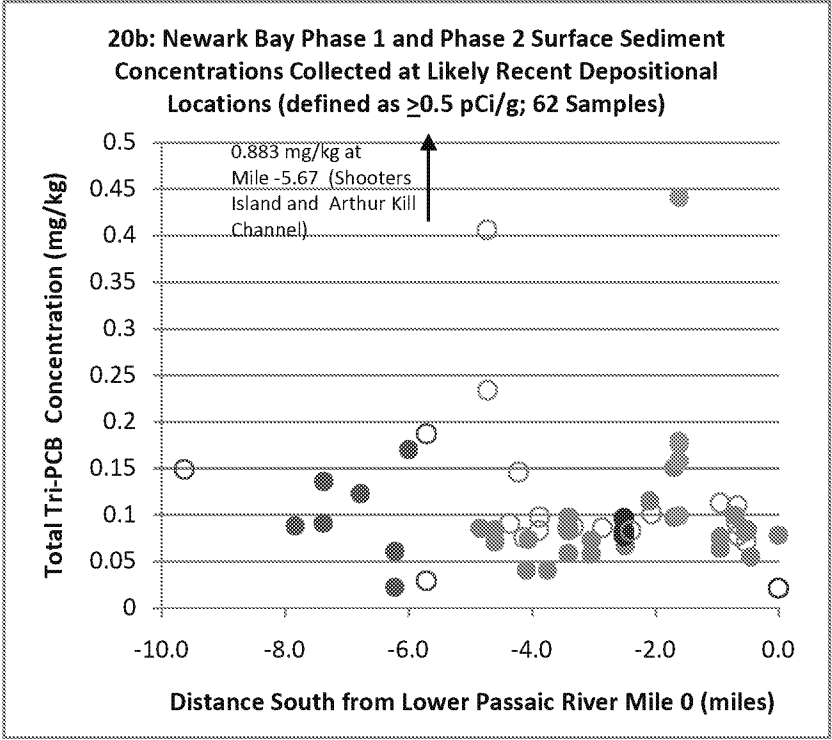
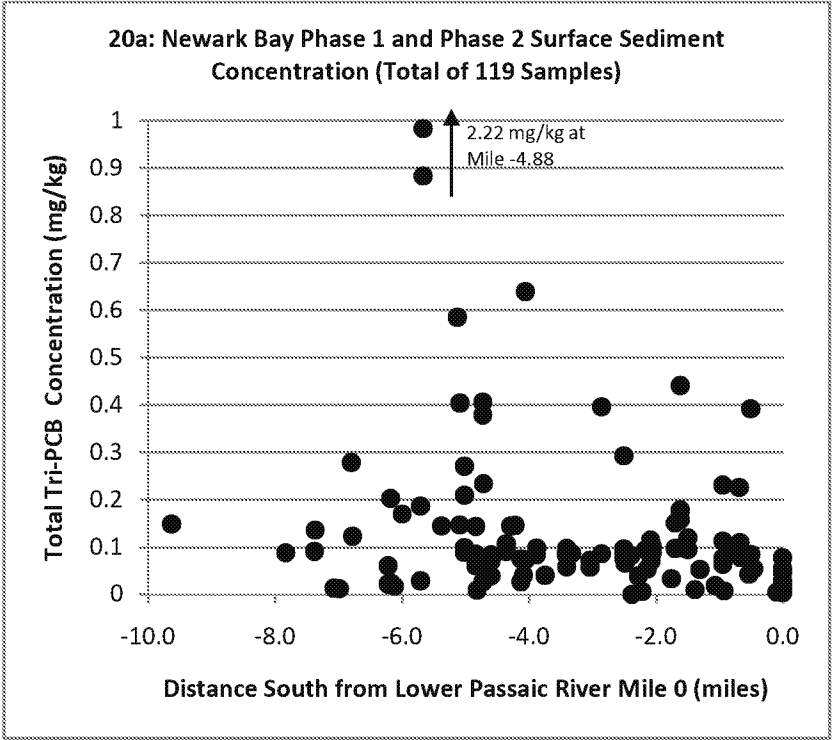
□ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)







**Notes**

1. Total Tri-PCB surface concentrations represent the top 6 inches of the core.
2. When duplicate Total Tri-PCB values are provided by the laboratory, the average concentration is plotted.
3. No nondetect Total Tri-PCB concentrations were reported in surface sediment samples.
4. Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
5. Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile -1.62, and Port Elizabeth plots at Mile -2.51.
6. Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
7. Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values for Total Tri+PCBs are not available in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.



Total Tri-PCB Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

October 2010

Figure 20

## Legend

### Phase 1 - Total Tetra-PCB (mg/kg)

- ◀ < 0.010
- ◀ 0.011 - 0.030
- ◀ 0.031 - 0.100
- ◀ 0.101 - 0.300
- ◀ 0.301 - 1.000
- ◀ > 1.00

### Phase 2 - Total Tetra-PCB (mg/kg)

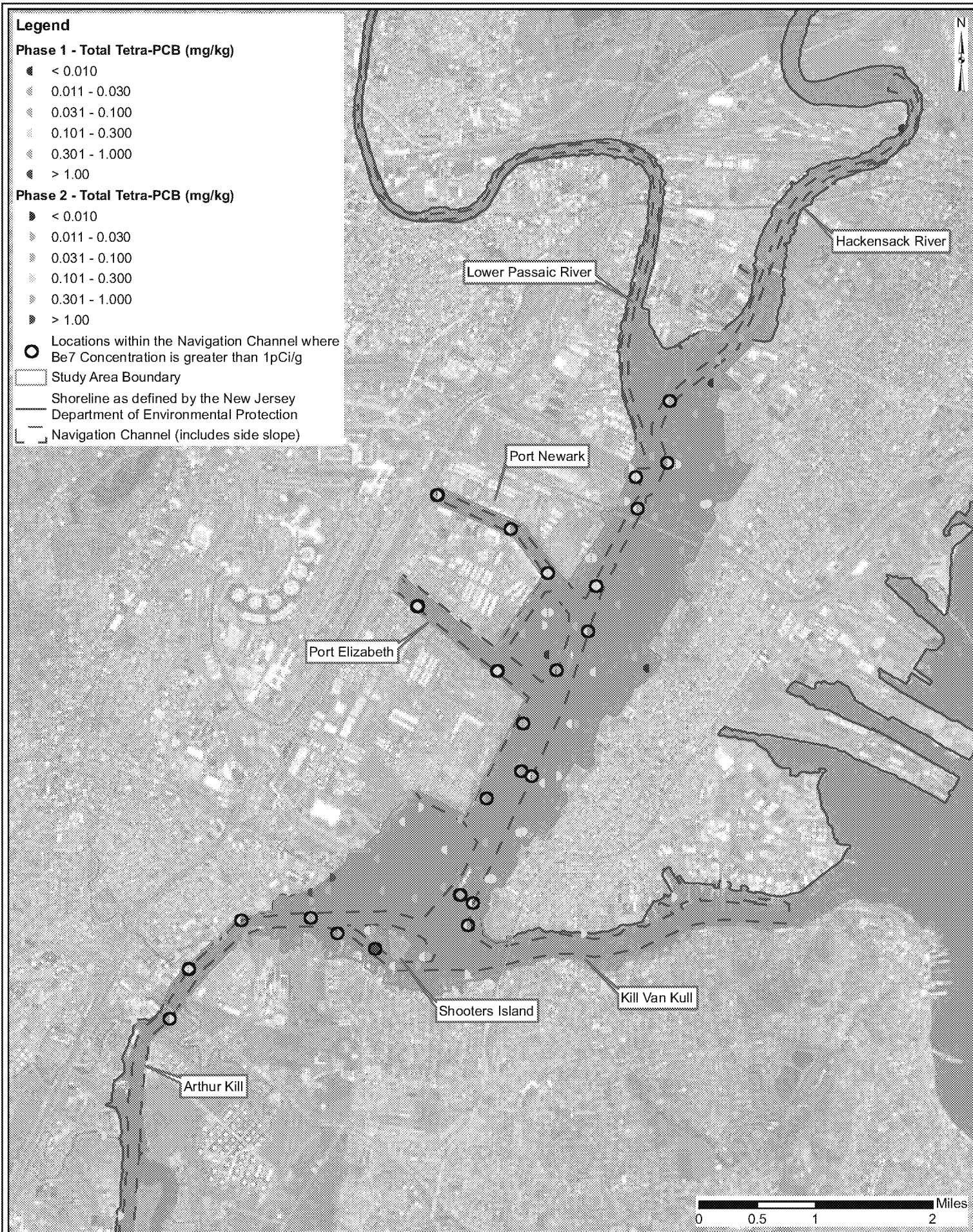
- ▶ < 0.010
- ▶ 0.011 - 0.030
- ▶ 0.031 - 0.100
- ▶ 0.101 - 0.300
- ▶ 0.301 - 1.000
- ▶ > 1.00

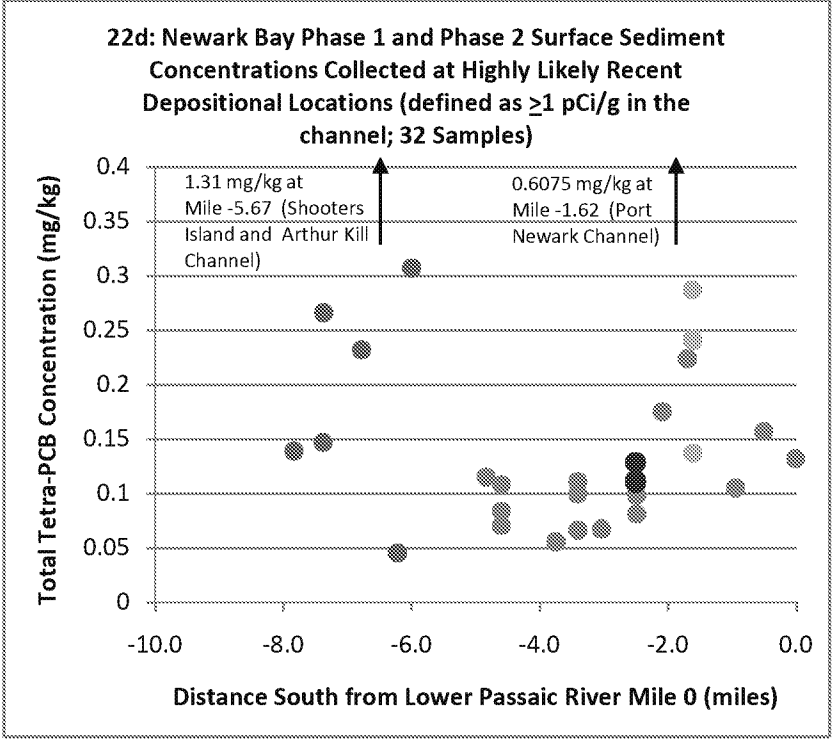
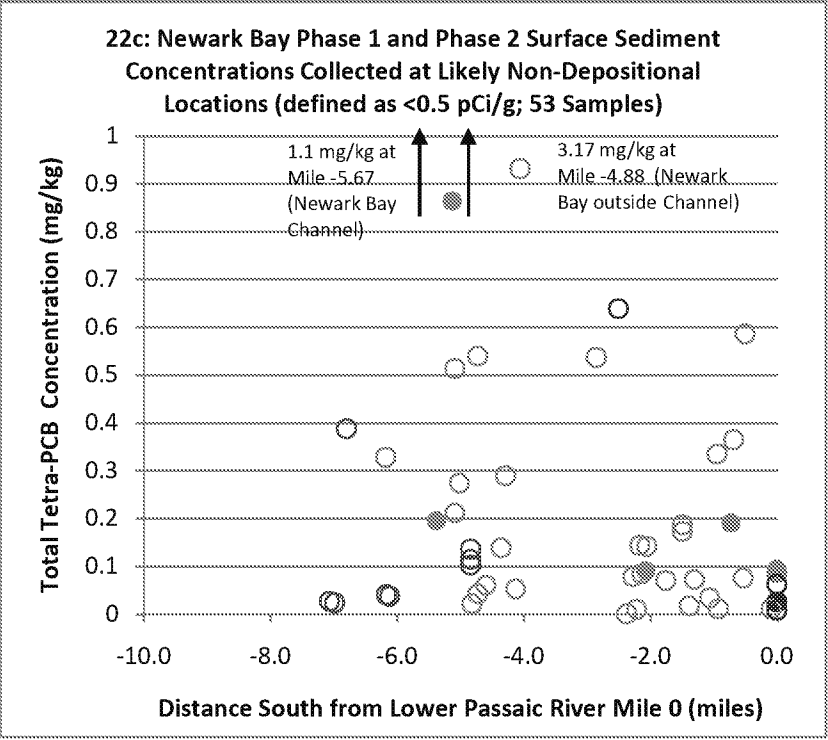
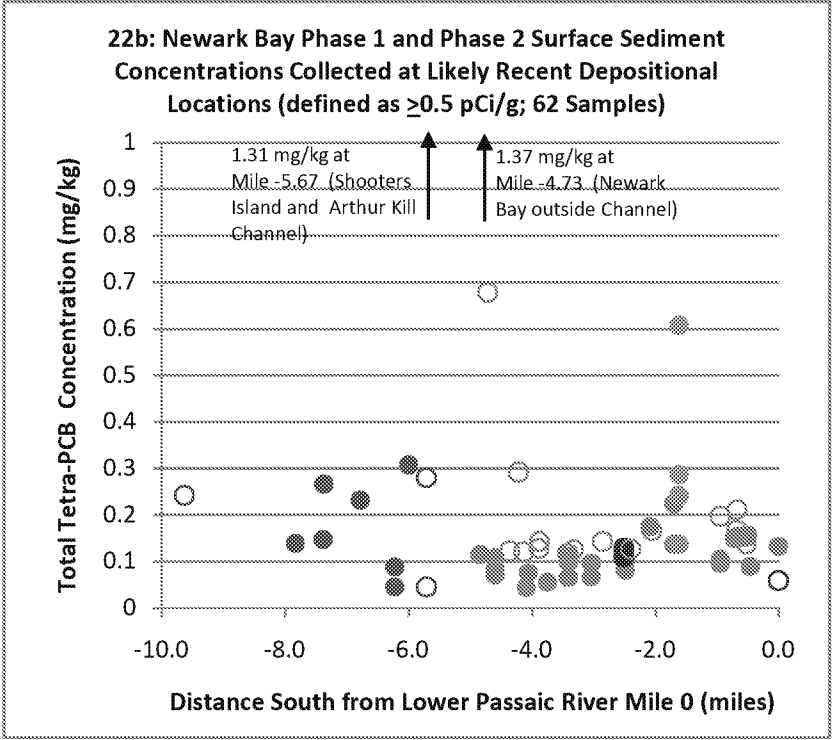
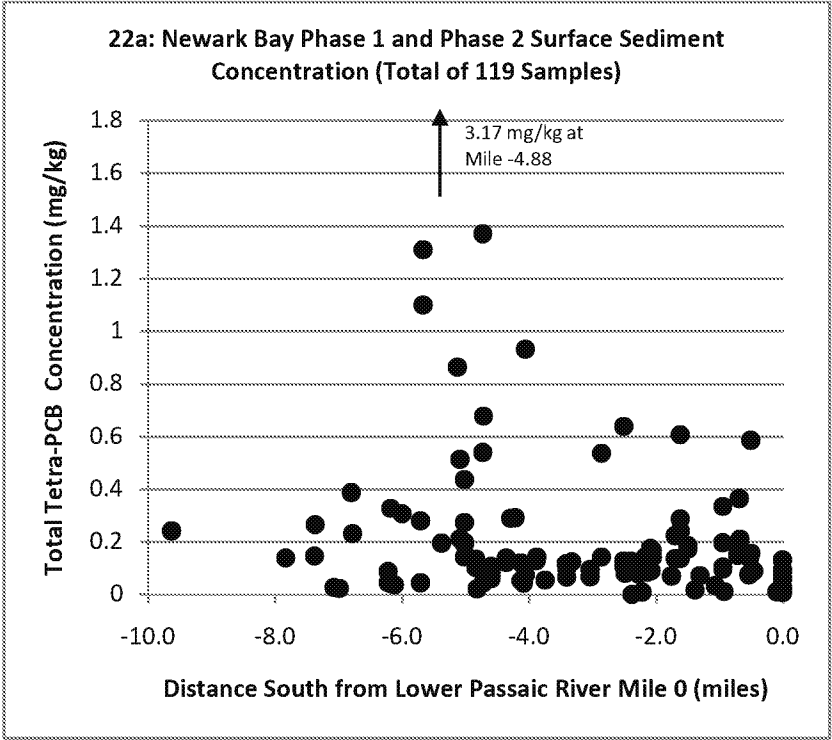
○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

□ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)





- Legend**
- All Phase 1 and 2 Sampling Locations
  - Newark Bay Navigational Channel (includes side slopes)
  - Newark Bay Outside of Channel
  - Port Elizabeth Navigational Channel (includes side slopes)
  - Port Elizabeth Outside of Channel
  - Port Newark Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Outside of Channel
  - Hackensack River Navigational Channel (includes side slopes)
  - Hackensack River Outside of Channel
  - Kill Van Kull Outside of Channel

**Notes**

1. Total Tetra-PCB surface concentrations represent the top 6 inches of the core.
2. When duplicate Total Tetra-PCB values are provided by the laboratory, the average concentration is plotted.
3. No nondetect Total Tetra-PCB concentrations were reported in surface sediment samples.
4. Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
5. Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile -1.62, and Port Elizabeth plots at Mile -2.51.
6. Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
7. Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values for Total Tetra-PCBs are not available in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.



Total Tetra-PCB Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

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Figure 22

## Legend

### Phase 1 - Total Penta-PCB (mg/kg)

- ◀ < 0.010
- ◀ 0.011 - 0.030
- ◀ 0.031 - 0.100
- ◀ 0.101 - 0.300
- ◀ > 0.30

### Phase 2 - Total Penta-PCB (mg/kg)

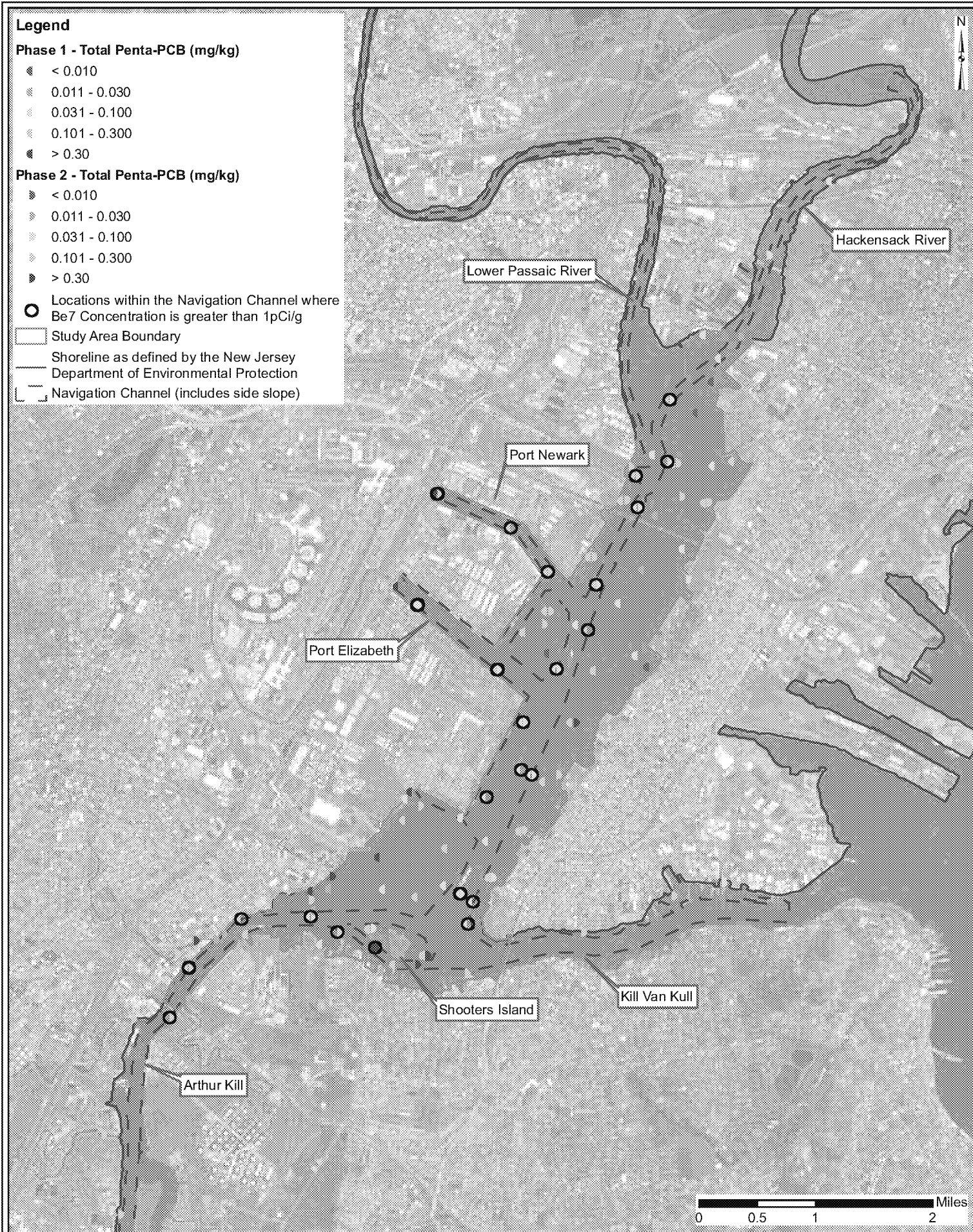
- ▶ < 0.010
- ▶ 0.011 - 0.030
- ▶ 0.031 - 0.100
- ▶ 0.101 - 0.300
- ▶ > 0.30

○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

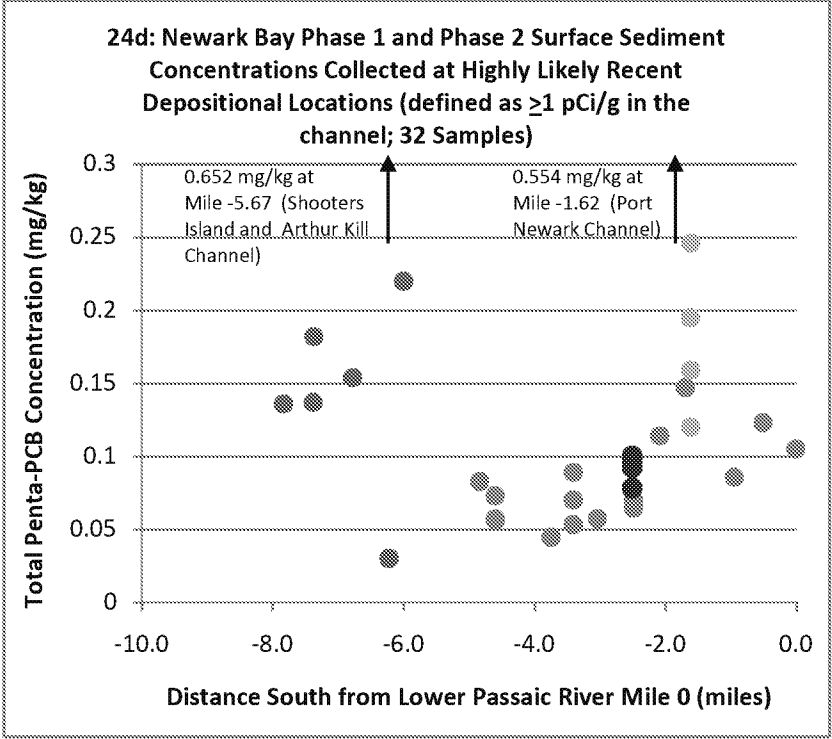
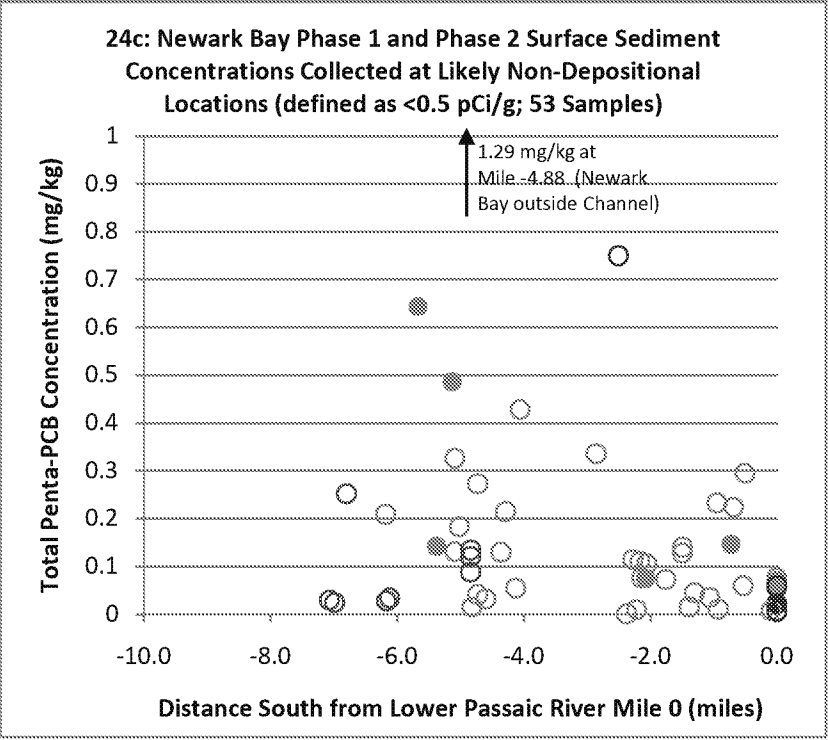
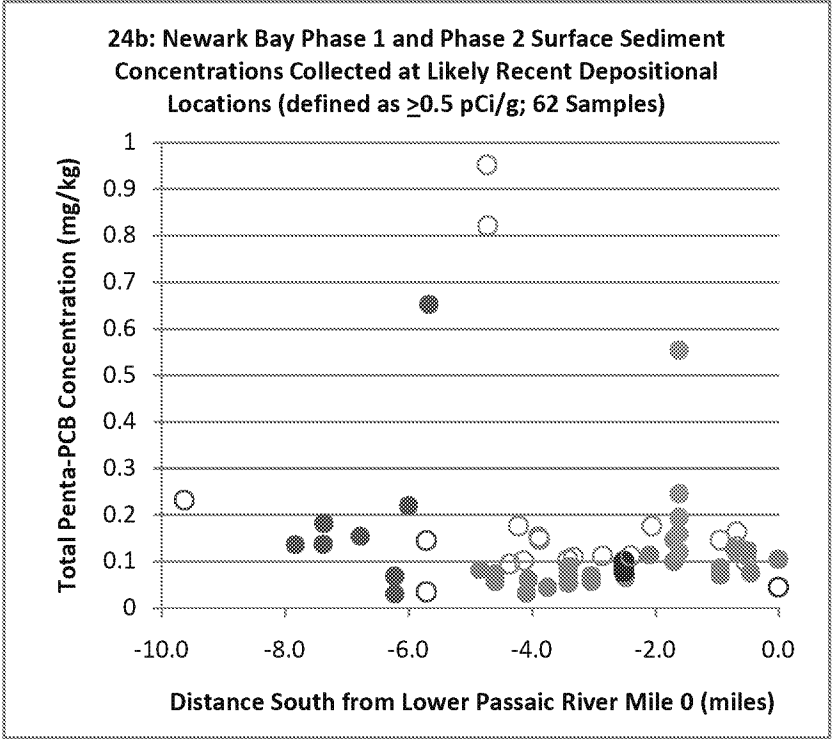
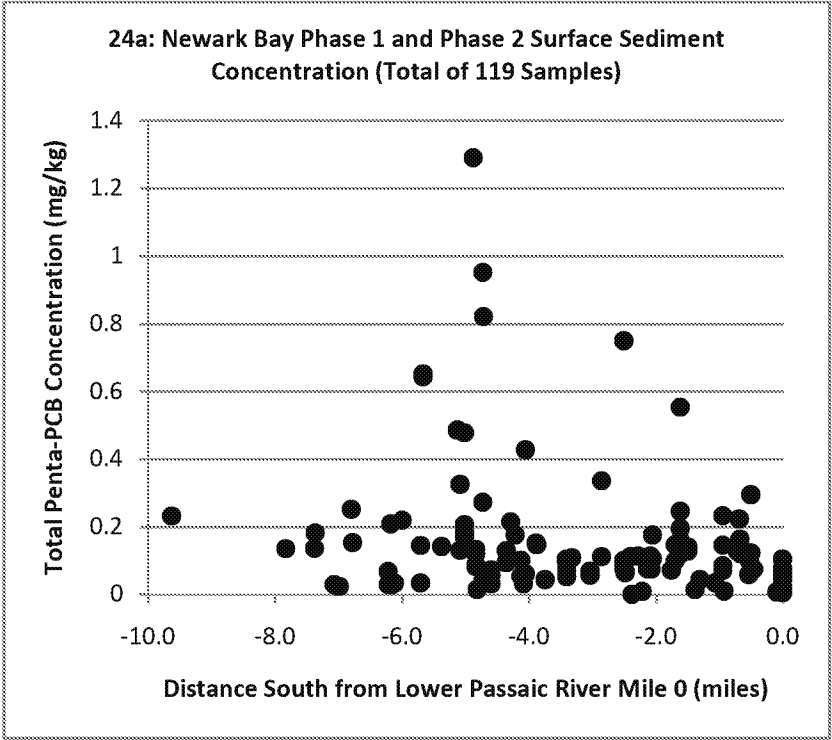
□ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)







- Legend**
- All Phase 1 and 2 Sampling Locations
  - Newark Bay Navigational Channel (includes side slopes)
  - Newark Bay Outside of Channel
  - Port Elizabeth Navigational Channel (includes side slopes)
  - Port Elizabeth Outside of Channel
  - Port Newark Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Outside of Channel
  - Hackensack River Navigational Channel (includes side slopes)
  - Hackensack River Outside of Channel
  - Kill Van Kull Outside of Channel

**Notes**

- Total Penta-PCB surface concentrations represent the top 6 inches of the core.
- When duplicate Total Penta-PCB values are provided by the laboratory, the average concentration is plotted.
- No nondetect Total Penta-PCB concentrations were reported in surface sediment samples.
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile -1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
- Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values for Total Penta-PCBs are not available in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.



Total Penta-PCB Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

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Figure 24



## Legend

### Phase 1 - Total Hexa-PCB (mg/kg)

- ◀ < 0.010
- ◀ 0.011 - 0.030
- ◀ 0.031 - 0.100
- ◀ 0.101 - 0.300
- ◀ > 0.30

### Phase 2 - Total Hexa-PCB (mg/kg)

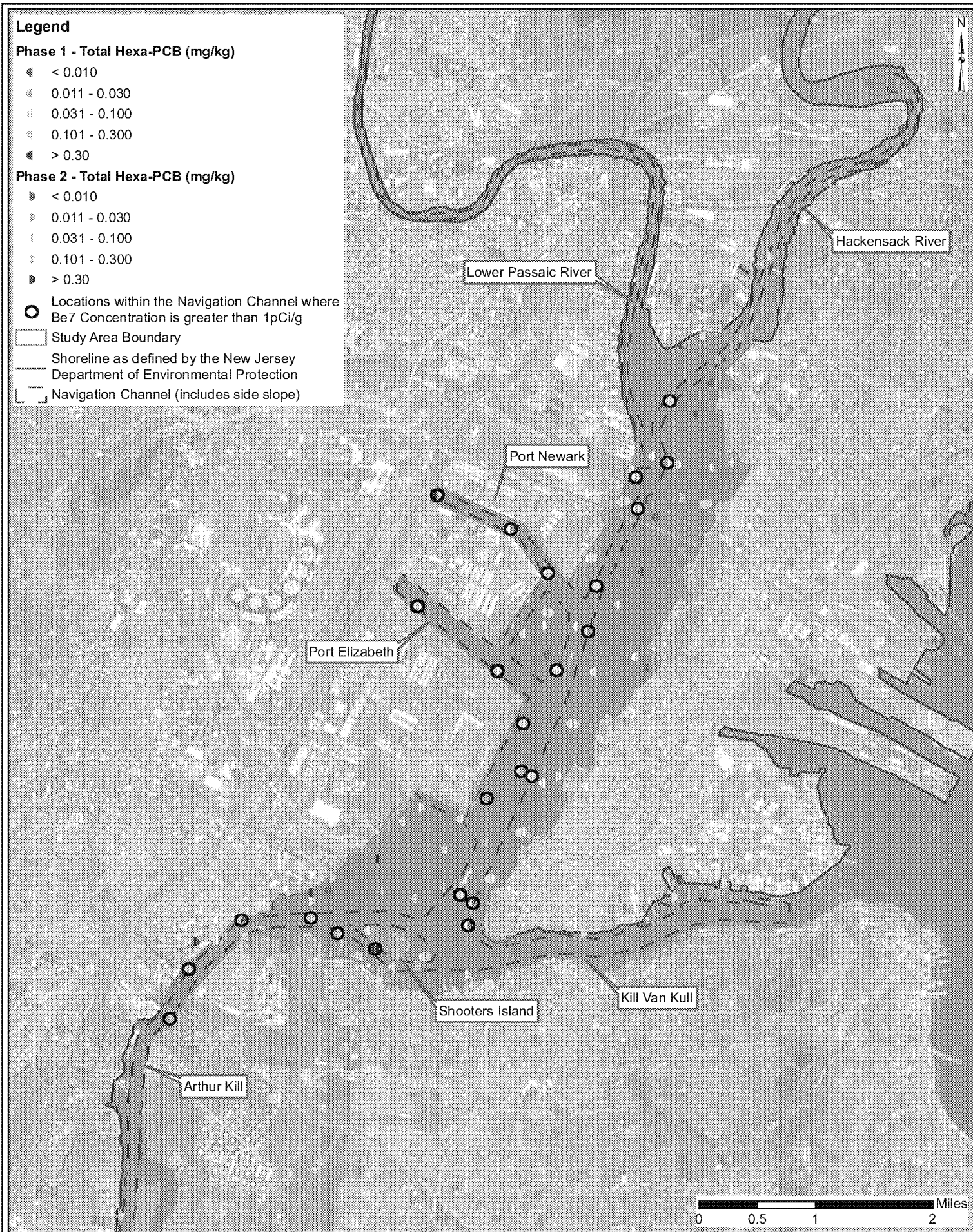
- ▶ < 0.010
- ▶ 0.011 - 0.030
- ▶ 0.031 - 0.100
- ▶ 0.101 - 0.300
- ▶ > 0.30

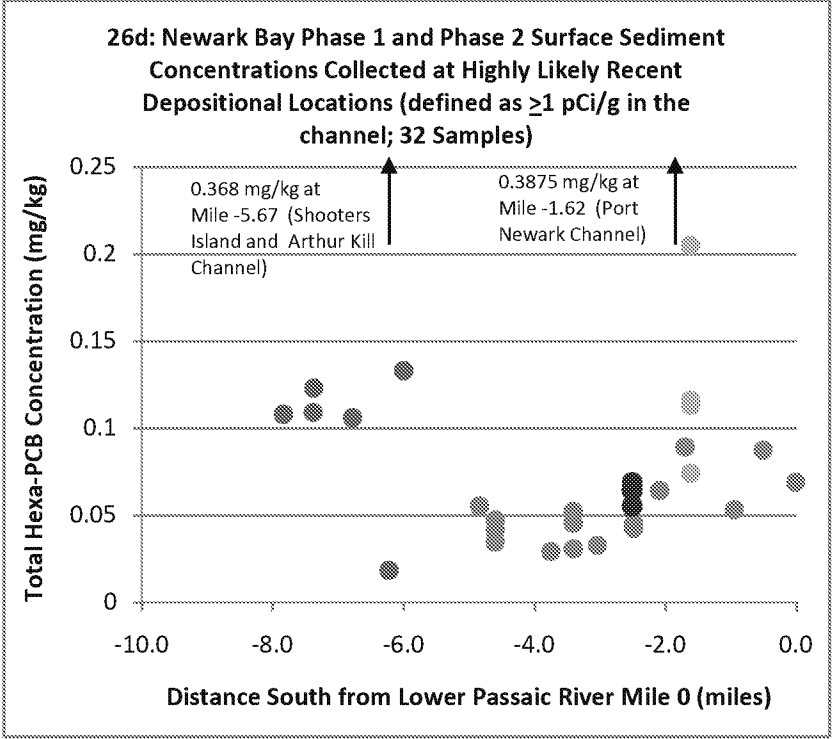
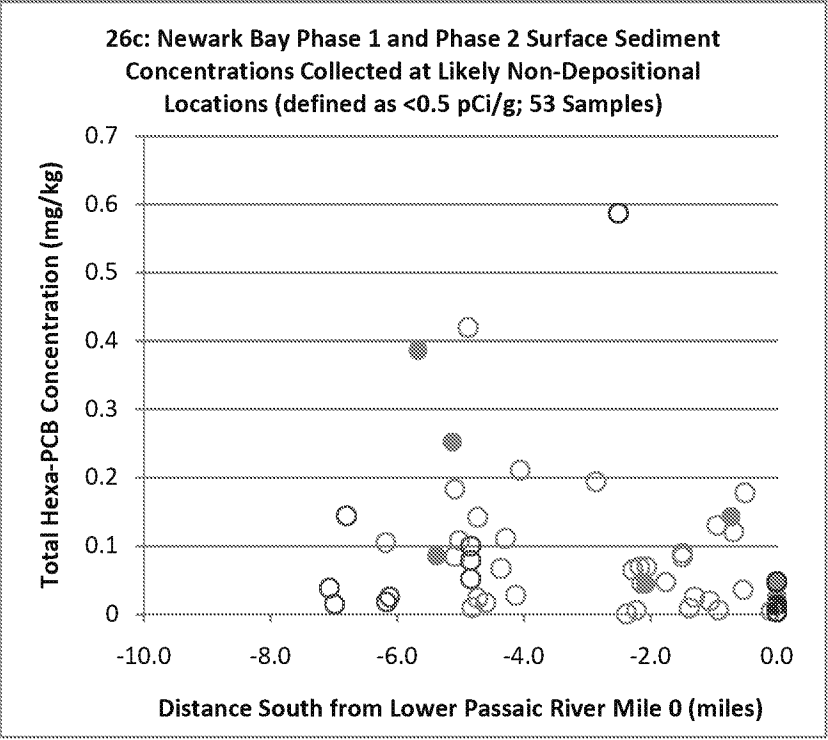
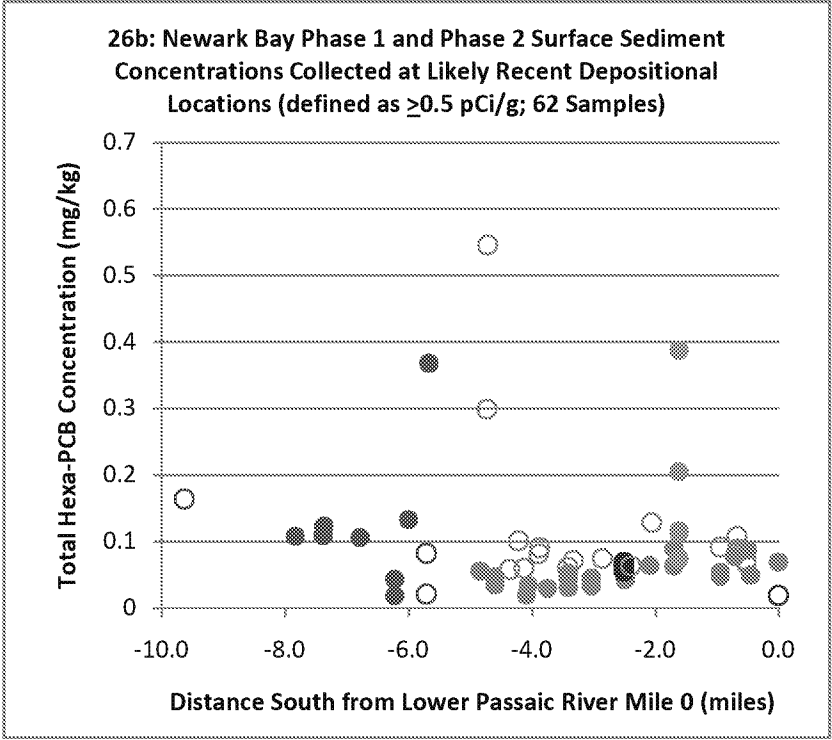
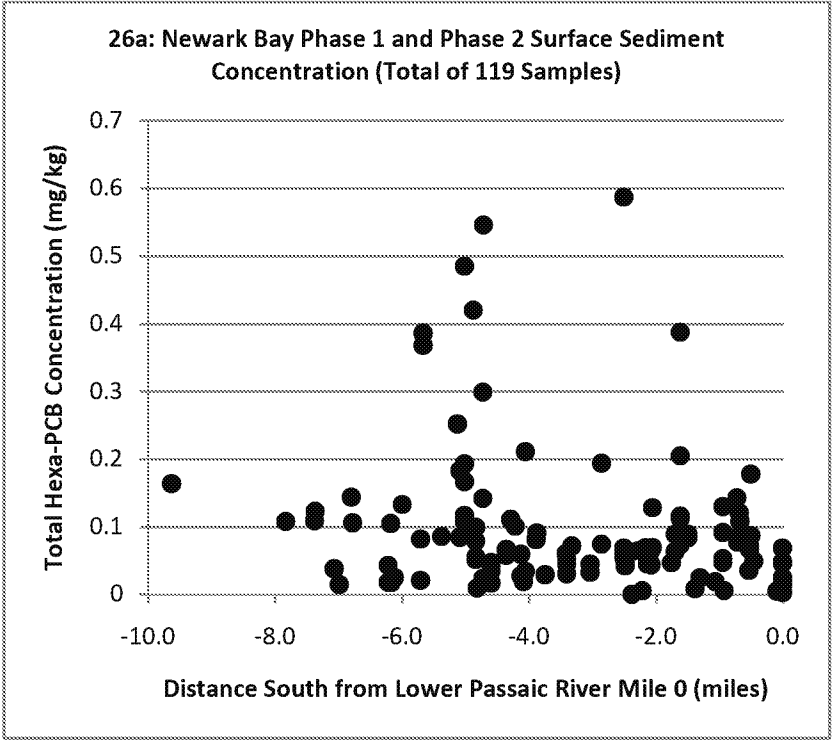
○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

□ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)





- Legend**
- All Phase 1 and 2 Sampling Locations
  - Newark Bay Navigational Channel (includes side slopes)
  - Newark Bay Outside of Channel
  - Port Elizabeth Navigational Channel (includes side slopes)
  - Port Elizabeth Outside of Channel
  - Port Newark Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Outside of Channel
  - Hackensack River Navigational Channel (includes side slopes)
  - Hackensack River Outside of Channel
  - Kill Van Kull Outside of Channel

**Notes**

- Total Hexa-PCB surface concentrations represent the top 6 inches of the core.
- When duplicate Total Hexa-PCB values are provided by the laboratory, the average concentration is plotted.
- No nondetect Total Hexa-PCB concentrations were reported in surface sediment samples.
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
- Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values for Total Hexa-PCBs are not available in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.

## Legend

### Phase 1 - Total Hepta-PCB (mg/kg)

- ◀ < 0.010
- ◀ 0.011 - 0.030
- ◀ 0.031 - 0.100
- ◀ 0.101 - 0.300
- ◀ > 0.30

### Phase 2 - Total Hepta-PCB (mg/kg)

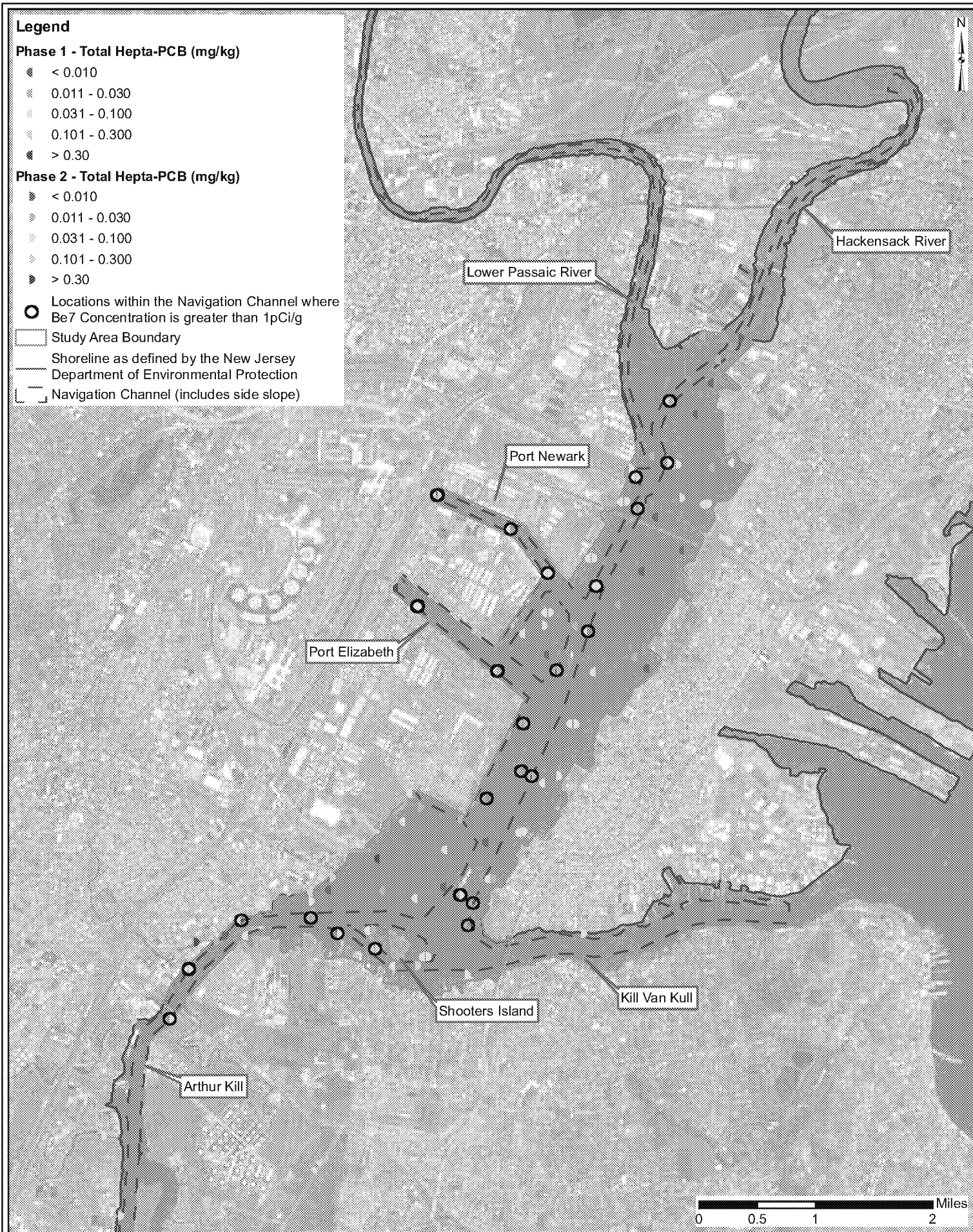
- ▶ < 0.010
- ▶ 0.011 - 0.030
- ▶ 0.031 - 0.100
- ▶ 0.101 - 0.300
- ▶ > 0.30

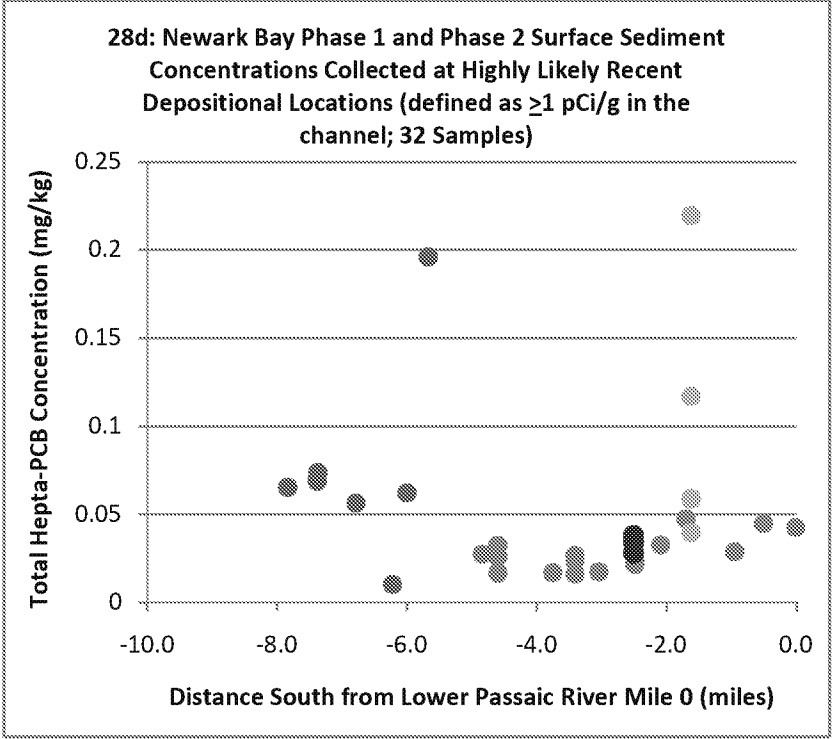
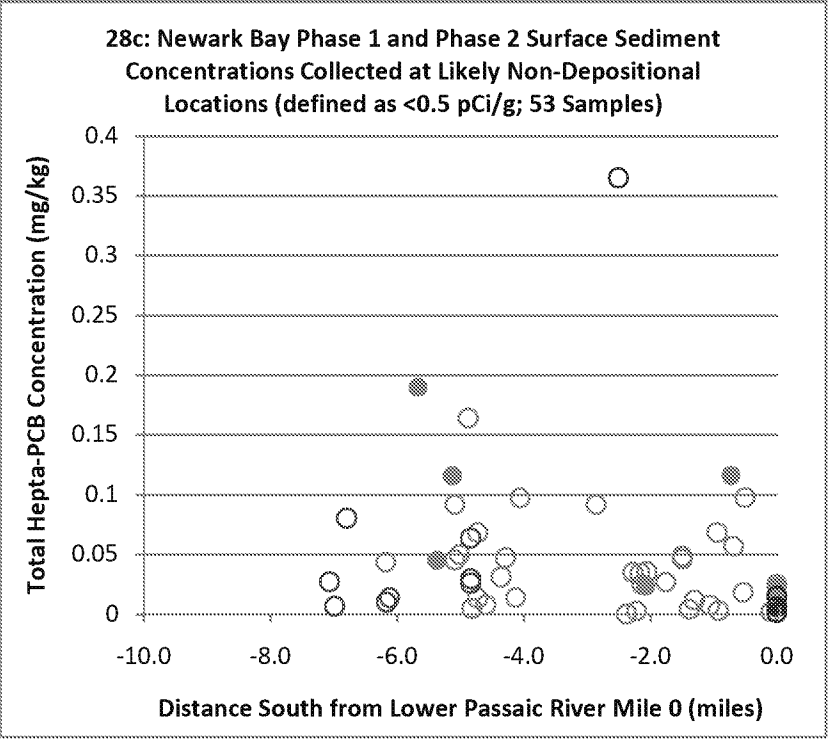
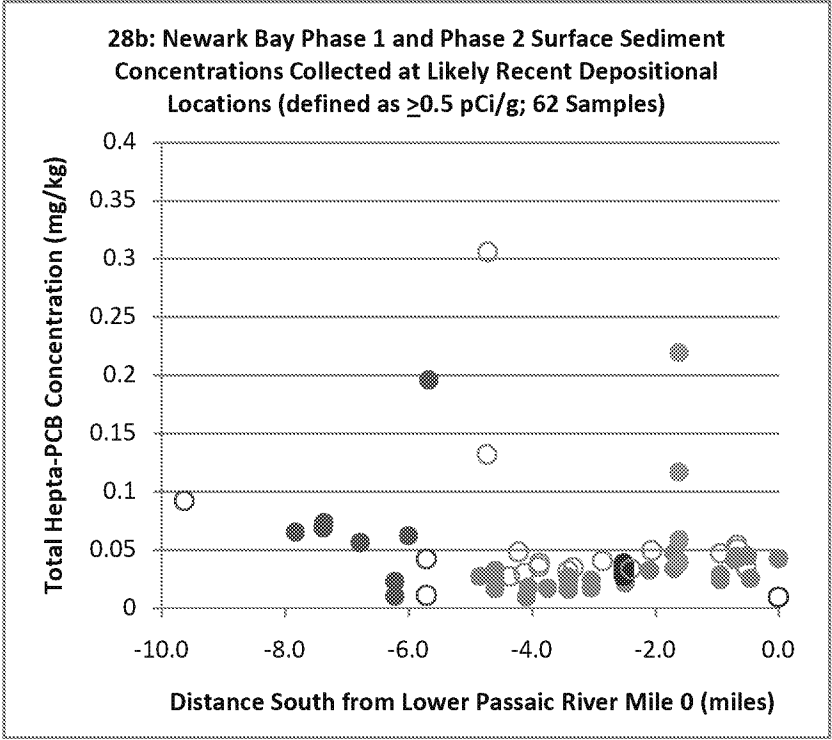
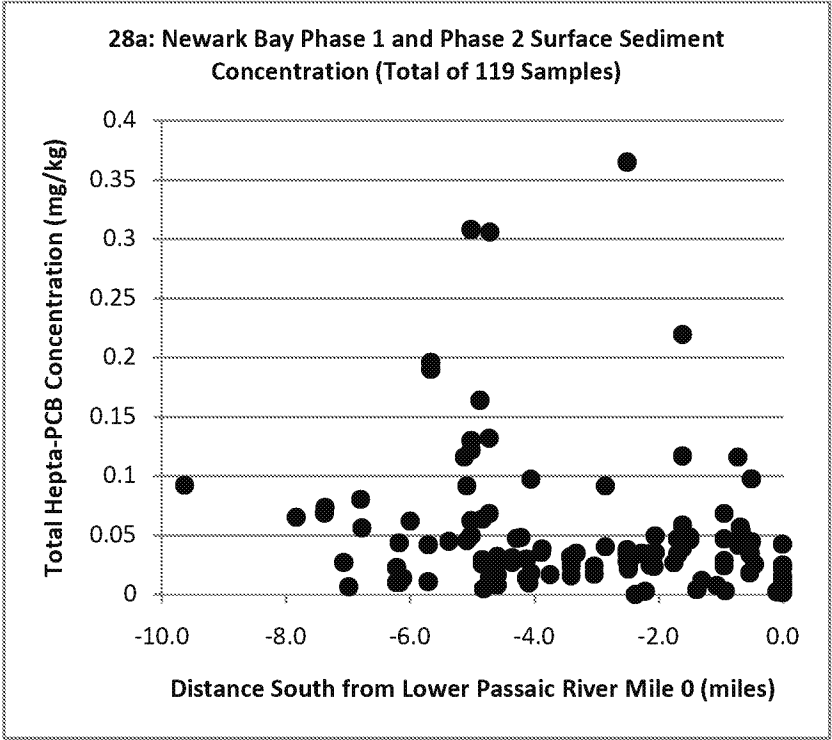
○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

□ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)





- Legend**
- All Phase 1 and 2 Sampling Locations
  - Newark Bay Navigational Channel (includes side slopes)
  - Newark Bay Outside of Channel
  - Port Elizabeth Navigational Channel (includes side slopes)
  - Port Elizabeth Outside of Channel
  - Port Newark Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Outside of Channel
  - Hackensack River Navigational Channel (includes side slopes)
  - Hackensack River Outside of Channel
  - Kill Van Kull Outside of Channel

**Notes**

- Total Hepta-PCB surface concentrations represent the top 6 inches of the core.
- When duplicate Total Hepta-PCB values are provided by the laboratory, the average concentration is plotted.
- No nondetect Total Hepta-PCB concentrations were reported in surface sediment samples.
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile -1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
- Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values for Total Hepta-PCBs are not available in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.



Total Hepta-PCB Surface Sediment Concentrations  
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Figure 28



## Legend

### Phase 1 - Total Octa-PCB (mg/kg)

- ◀ < 0.001
- ◀ 0.002 - 0.003
- ◀ 0.004 - 0.010
- ◀ 0.011 - 0.030
- ◀ 0.031 - 0.100
- ◀ > 0.10

### Phase 2 - Total Octa-PCB (mg/kg)

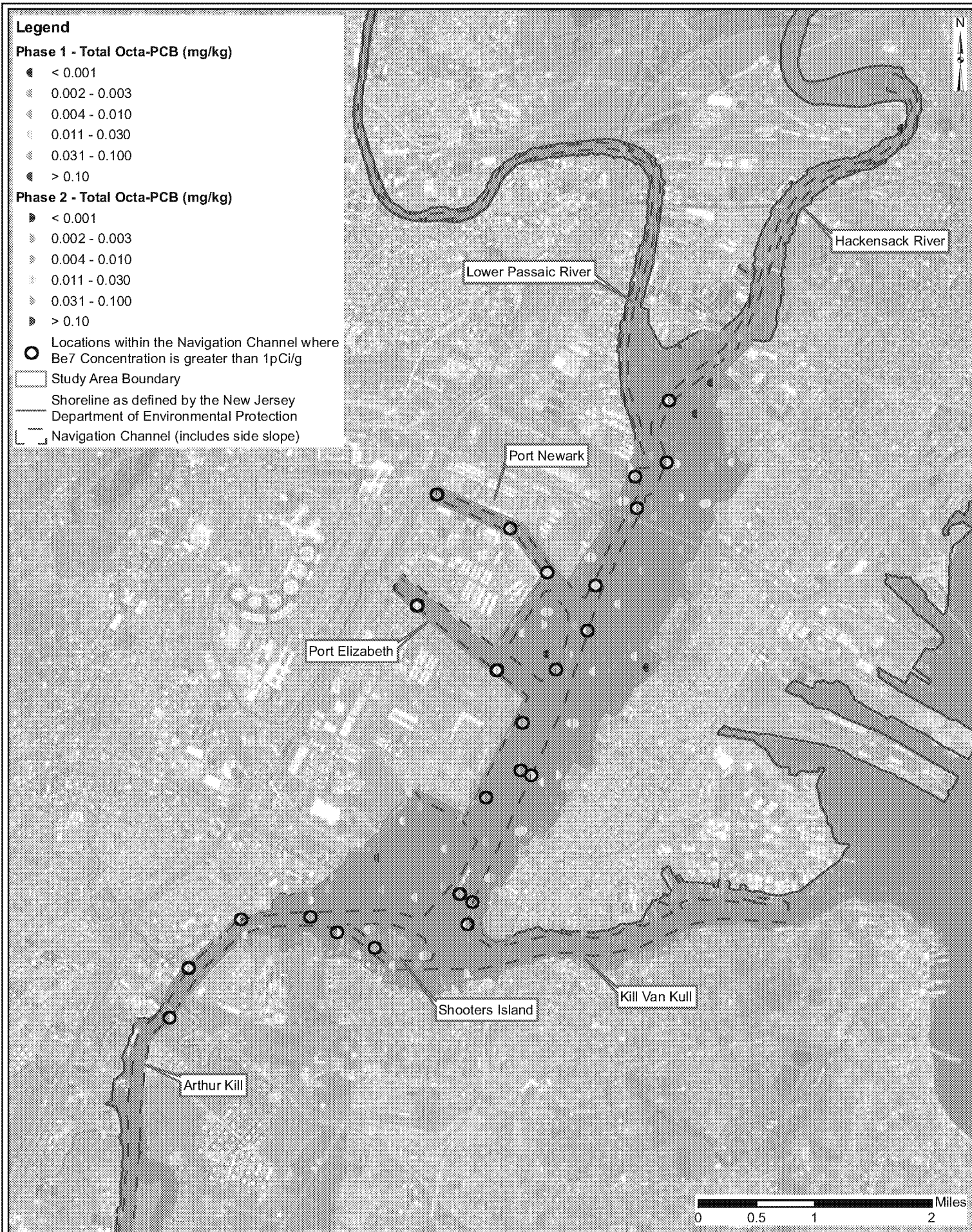
- ▶ < 0.001
- ▶ 0.002 - 0.003
- ▶ 0.004 - 0.010
- ▶ 0.011 - 0.030
- ▶ 0.031 - 0.100
- ▶ > 0.10

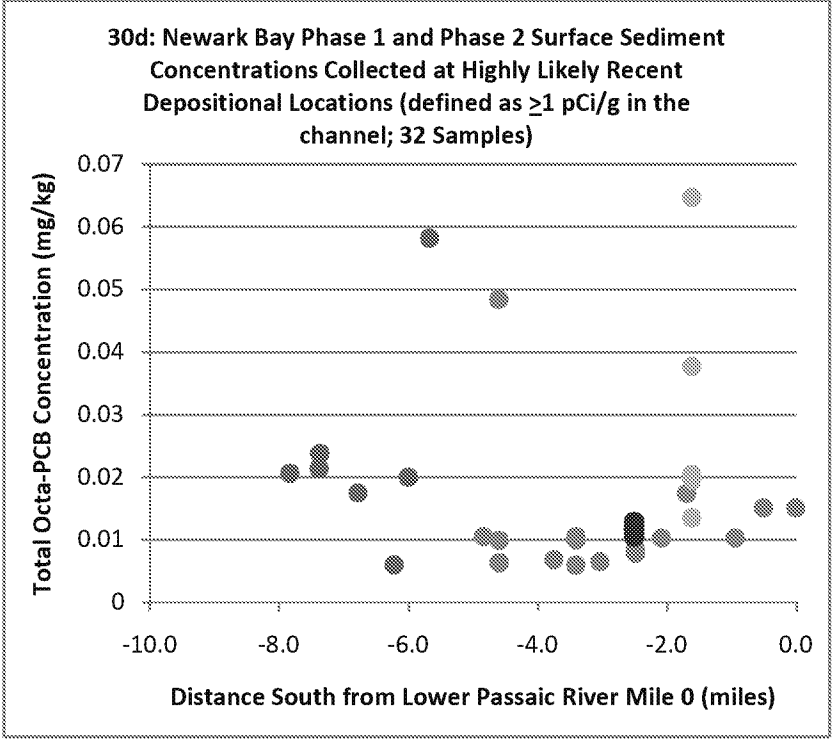
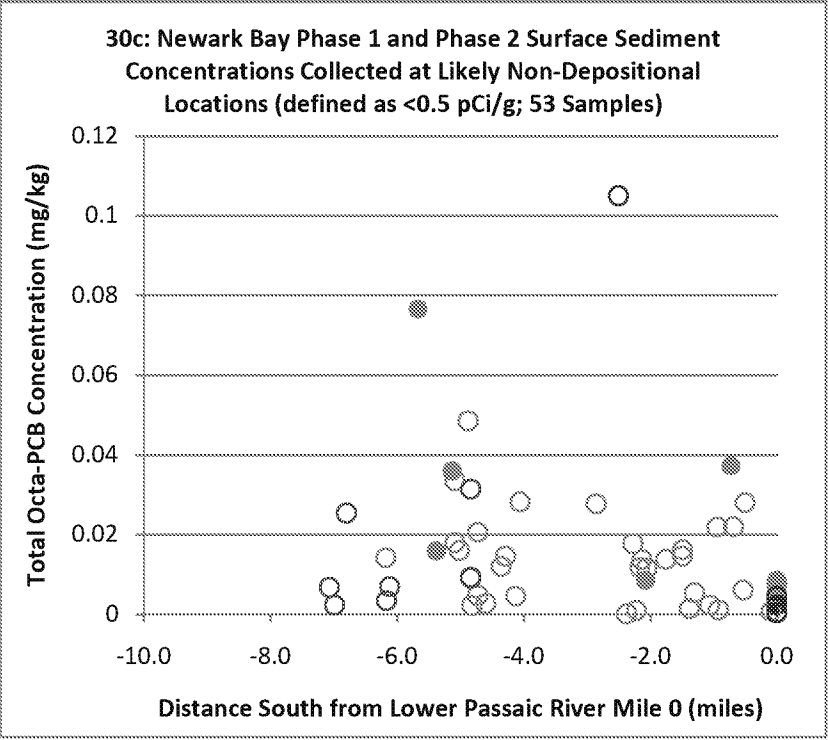
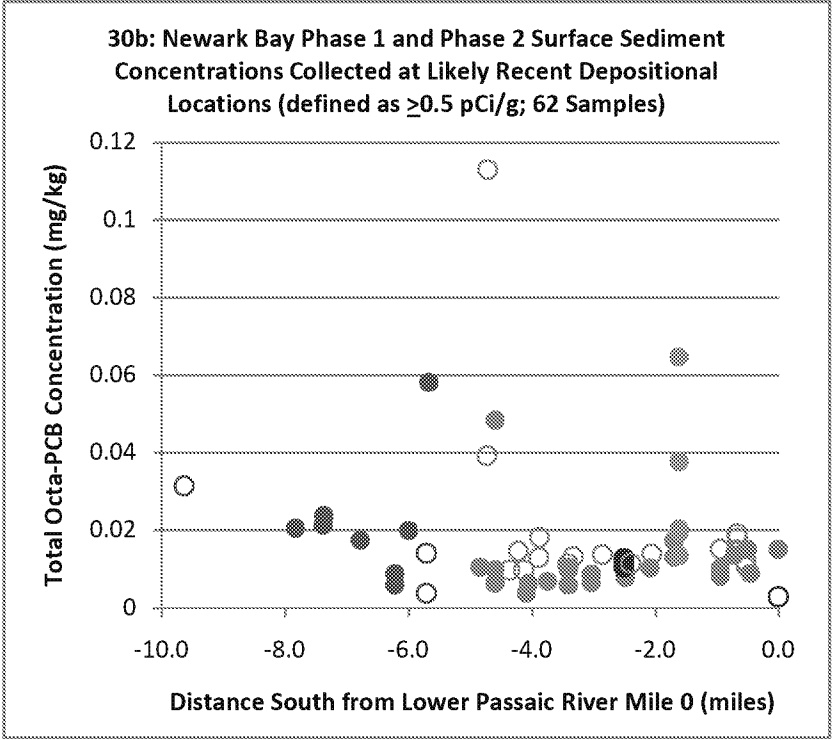
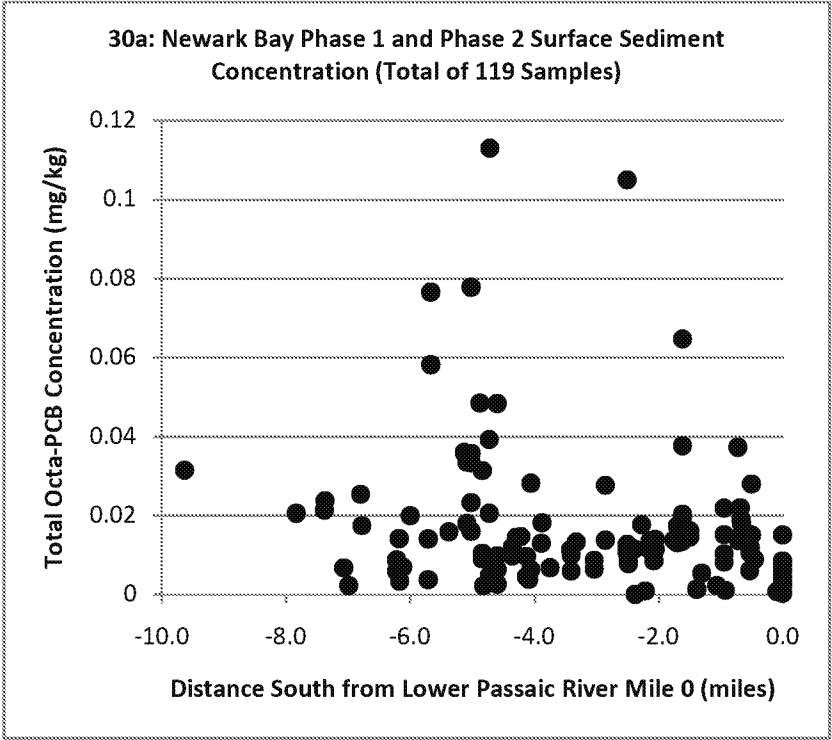
○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

□ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)





- Legend**
- All Phase 1 and 2 Sampling Locations
  - Newark Bay Navigational Channel (includes side slopes)
  - Newark Bay Outside of Channel
  - Port Elizabeth Navigational Channel (includes side slopes)
  - Port Elizabeth Outside of Channel
  - Port Newark Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Outside of Channel
  - Hackensack River Navigational Channel (includes side slopes)
  - Hackensack River Outside of Channel
  - Kill Van Kull Outside of Channel

**Notes**

- Total Octa-PCB surface concentrations represent the top 6 inches of the core.
- When duplicate Total Octa-PCB values are provided by the laboratory, the average concentration is plotted.
- No nondetect Total Octa-PCB concentrations were reported in surface sediment samples.
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile -1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
- Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values for Total Octa-PCBs are not available in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.



Total Octa-PCB Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

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Figure 30

# Legend

## Phase 1 - Mercury (mg/kg)

- ◀ < 0.30
- ◀ 0.31 - 1.00
- ◀ 1.01 - 3.00
- ◀ 3.01 - 10.00
- ◀ > 10.00

## Phase 2 - Mercury (mg/kg)

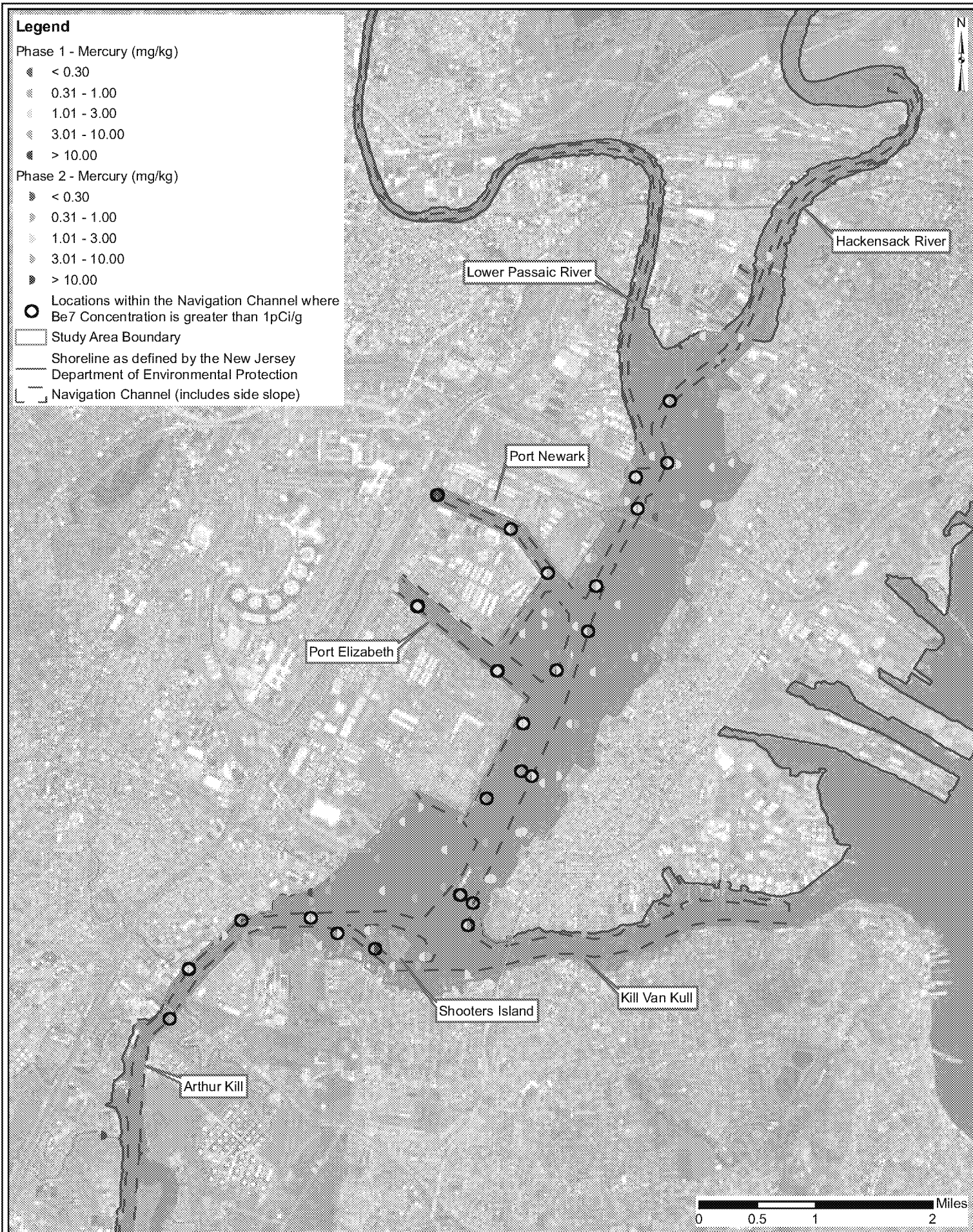
- ▶ < 0.30
- ▶ 0.31 - 1.00
- ▶ 1.01 - 3.00
- ▶ 3.01 - 10.00
- ▶ > 10.00

○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

□ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)



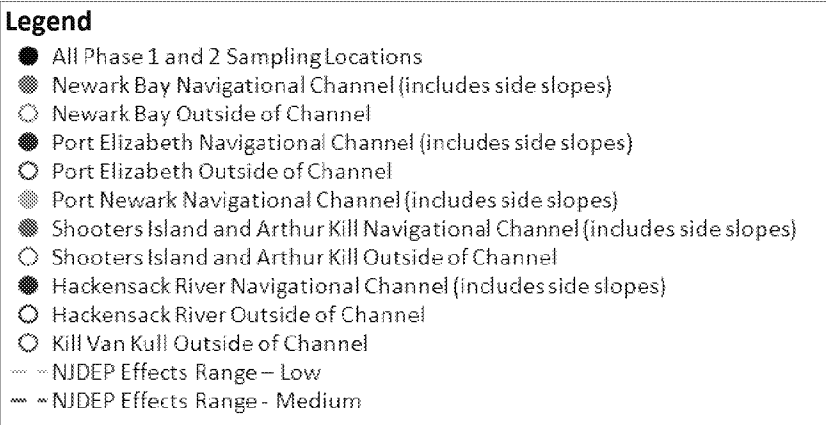
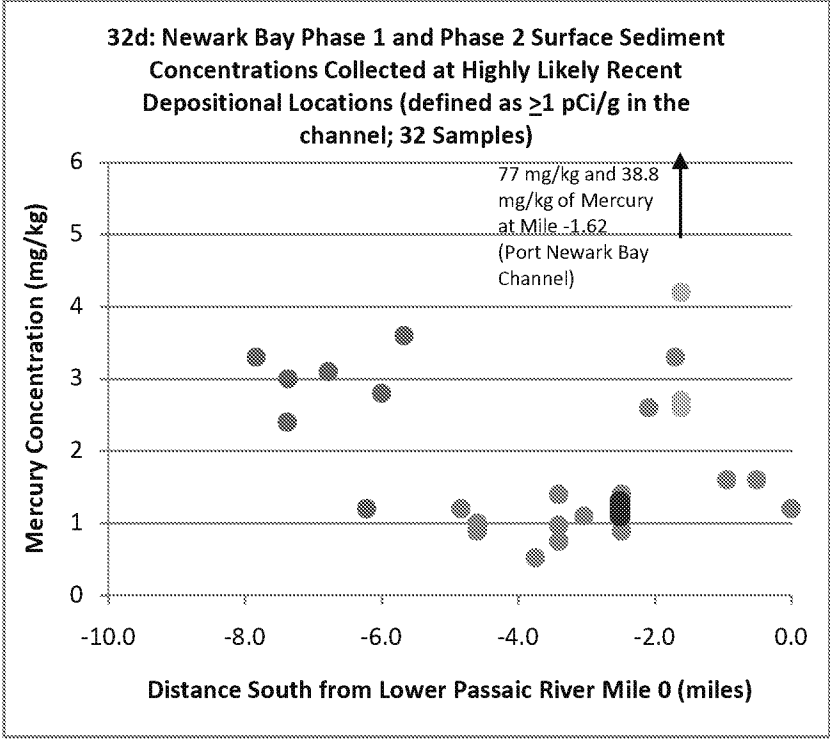
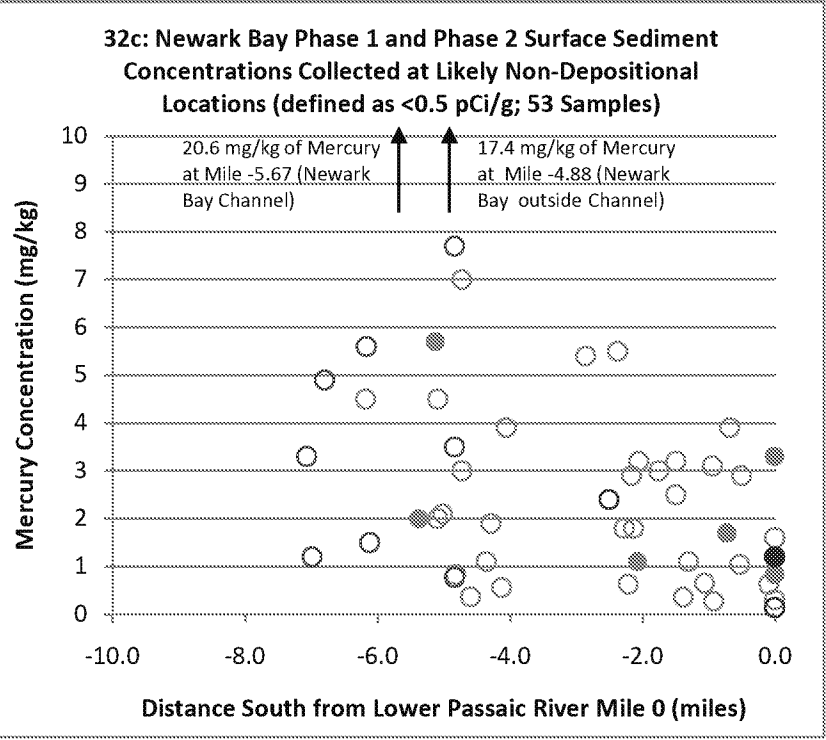
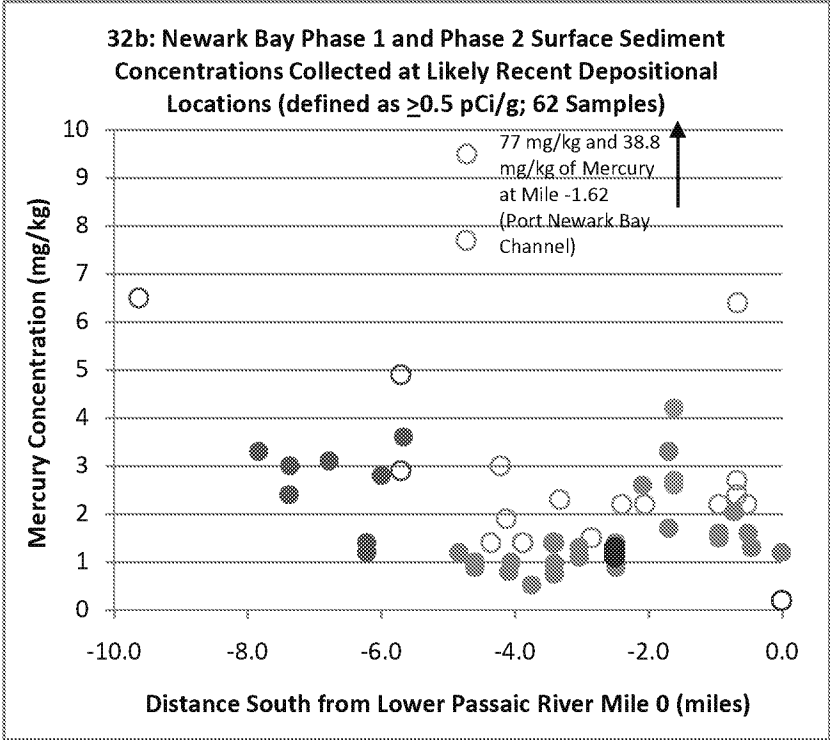
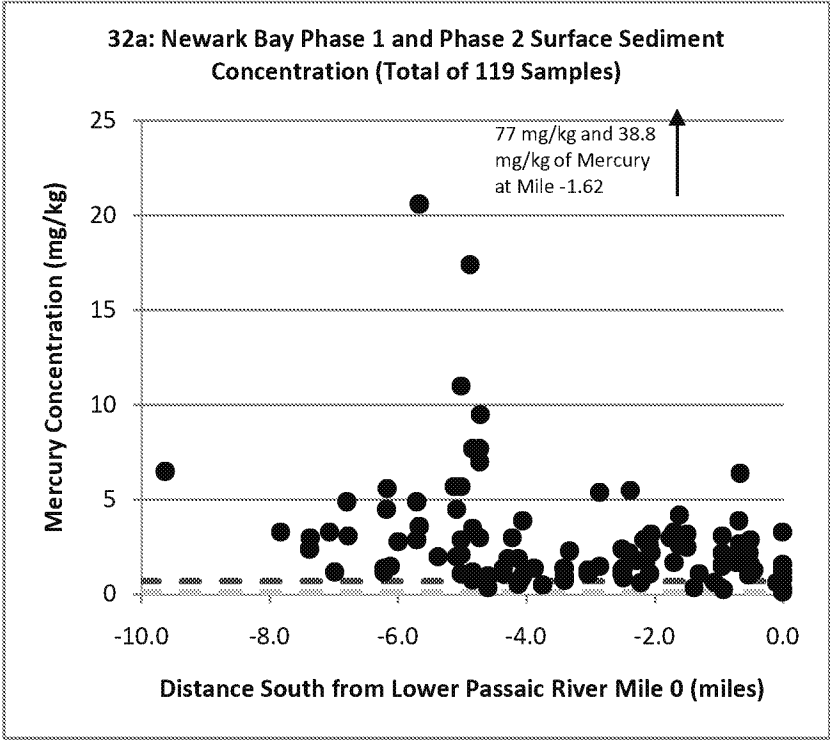
Mercury Concentration in Phase 1 and Phase 2 Surface Sediment (0-6 inch)

Newark Bay RI/FS Oversight

Figure 31

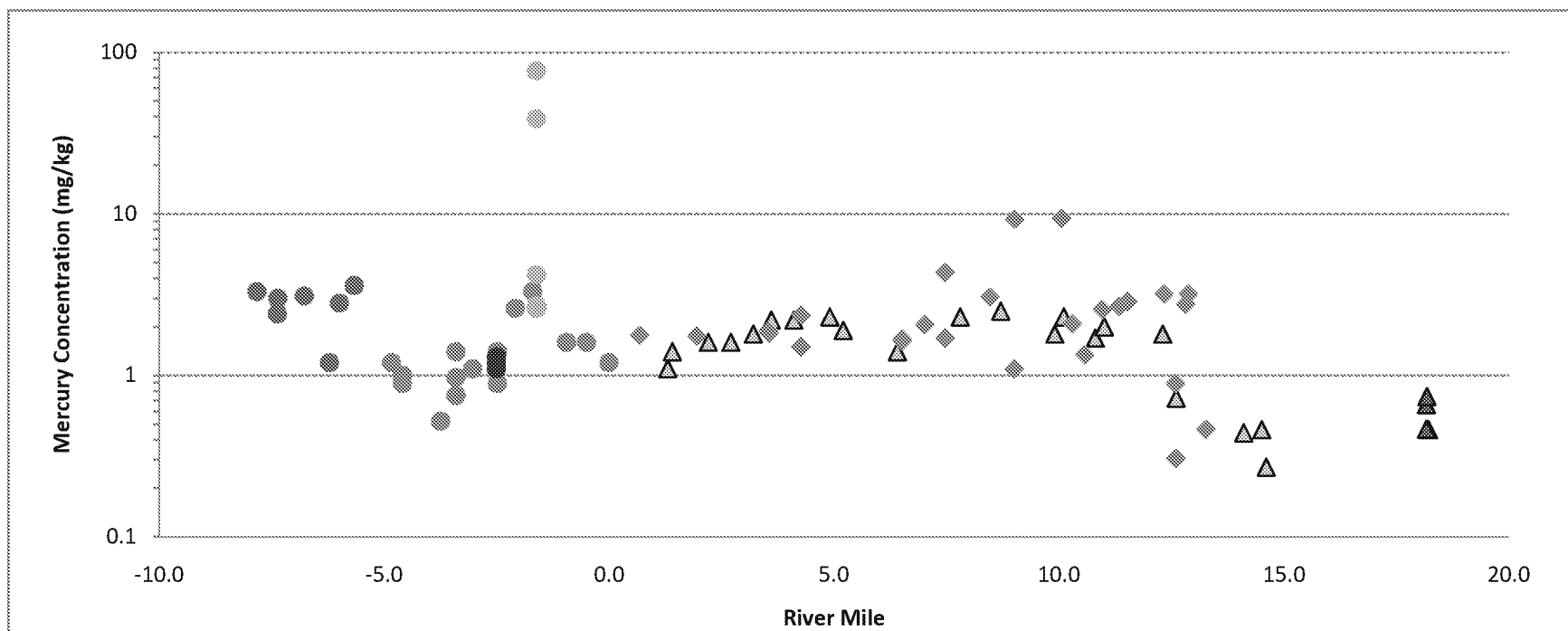
October 2010





- Notes**
- Mercury surface concentrations represent the top 6 inches of the core.
  - When duplicate mercury values are provided by the laboratory, the average concentration is plotted.
  - No nondetect mercury concentrations were reported in surface sediment samples.
  - Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
  - Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile -1.62, and Port Elizabeth plots at Mile -2.51.
  - Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
  - Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values are provided in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.





#### Legend

- Newark Bay Navigational Channel (includes side slopes; TSI 2005/2007)
- Port Elizabeth Navigational Channel (includes side slopes; TSI 2005/2007)
- Port Newark Navigational Channel (includes side slopes; TSI 2005/2007)
- Shooters Island and Arthur Kill Navigational Channel (includes side slopes; TSI 2005/2007)
- ▲ Lower Passaic River (MPI 2008)
- ▲ Upper Passaic River (MPI 2008)
- ◆ Lower Passaic River (CPG 2008)

#### Notes

- 1- Newark Bay Phase 1 and Phase 2 surface sediment concentrations collected at highly likely recent depositional locations (defined as  $\geq 1$  pCi/g in the channel; 32 samples).
- 2- Lower Passaic River surface sediment concentrations collected at likely recent depositional locations (defined as  $\geq 0.5$  pCi/g in the channel; 21 samples).
- 3- Upper Passaic River surface sediment concentrations collected at likely recent depositional locations (defined as  $\geq 0.5$  pCi/g in the channel; 4 samples).
- 4- Lower Passaic River CPG 2008 surface sediment concentrations collected at highly likely recent depositional locations (defined as  $\geq 1$  pCi/g; 26 samples).



Mercury Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

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Figure 33

## Legend

### Phase 1 - Cadmium (mg/kg)

- ◀ < 0.30
- ◀ 0.31 - 1.00
- ◀ 1.01 - 3.00
- ◀ 3.01 - 10.00
- ◀ > 10.00

### Phase 2 - Cadmium (mg/kg)

- ▶ < 0.30
- ▶ 0.31 - 1.00
- ▶ 1.01 - 3.00
- ▶ 3.01 - 10.00
- ▶ > 10.00

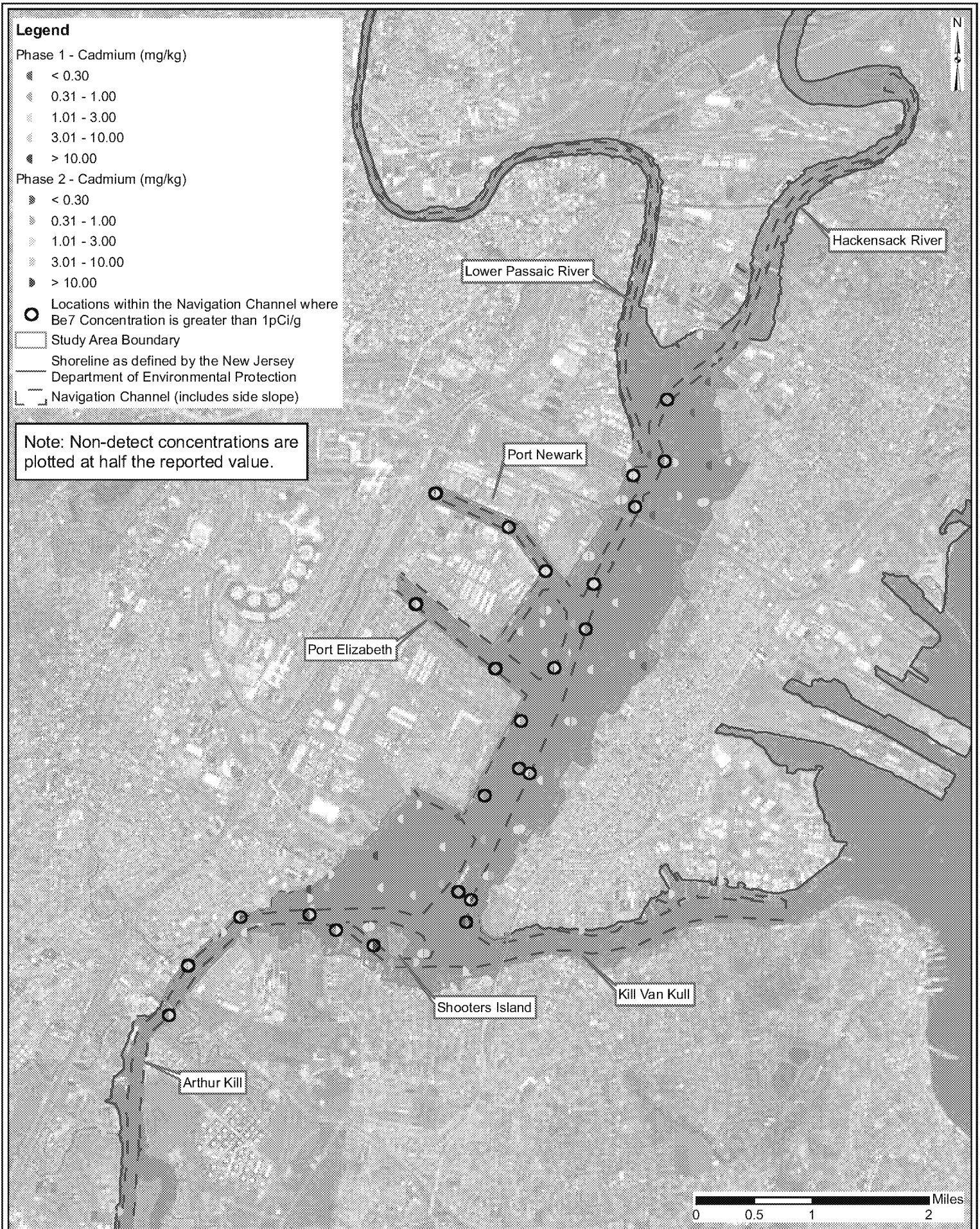
○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

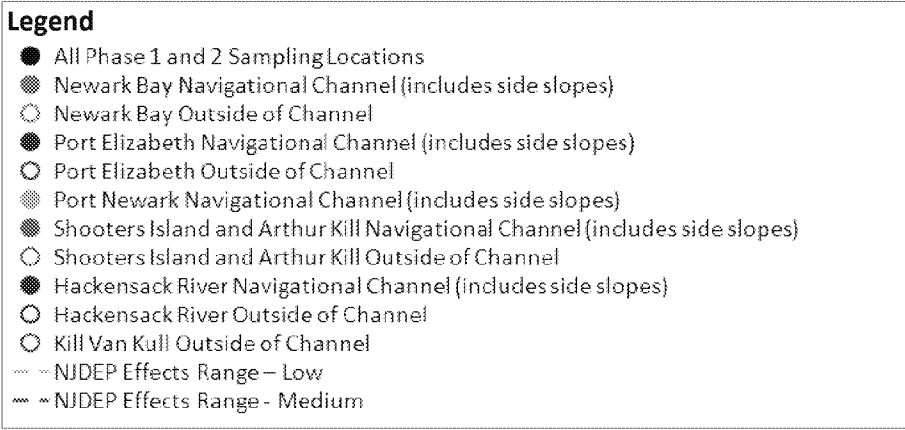
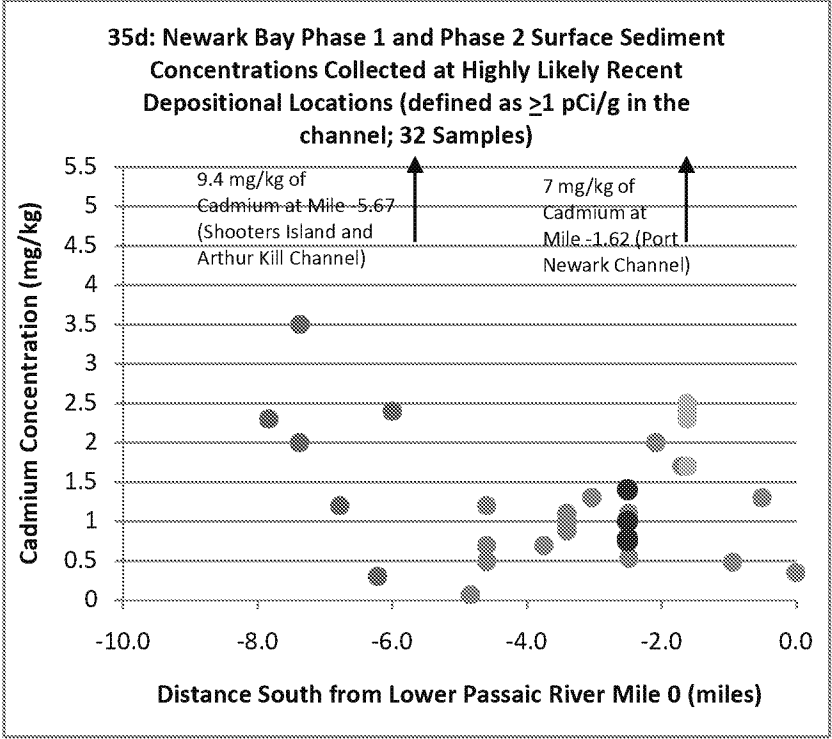
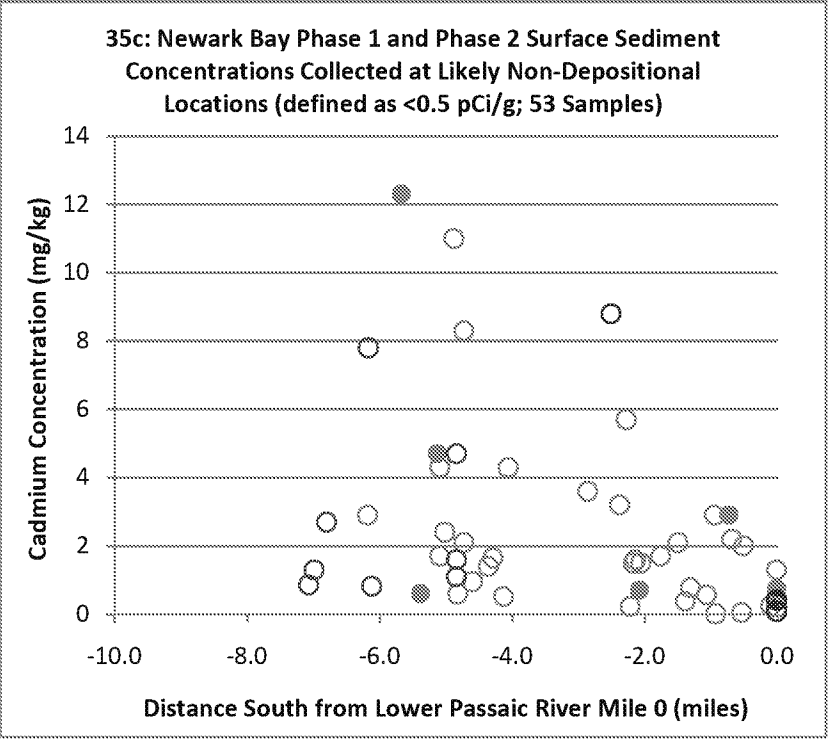
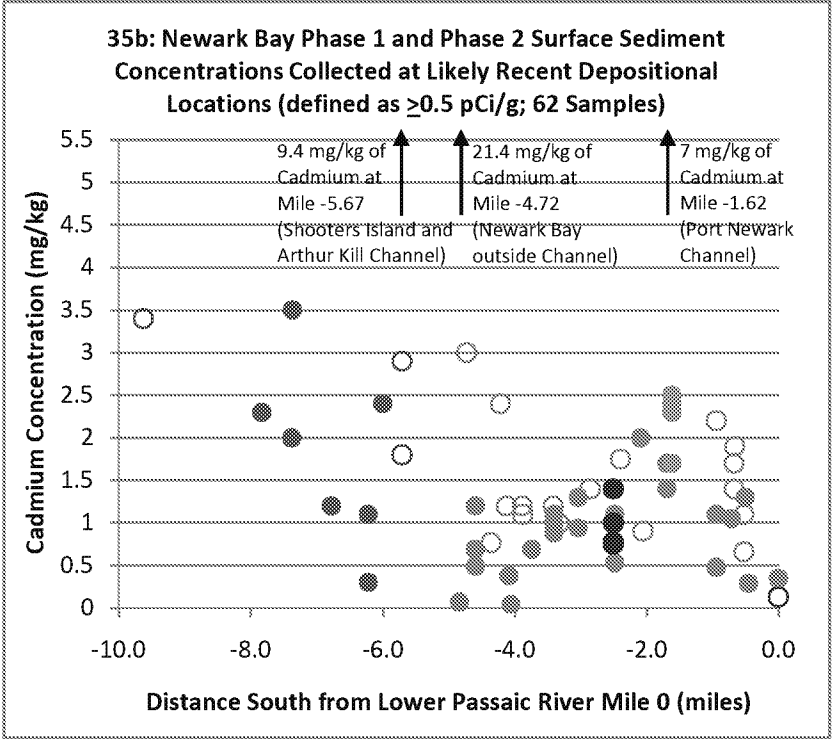
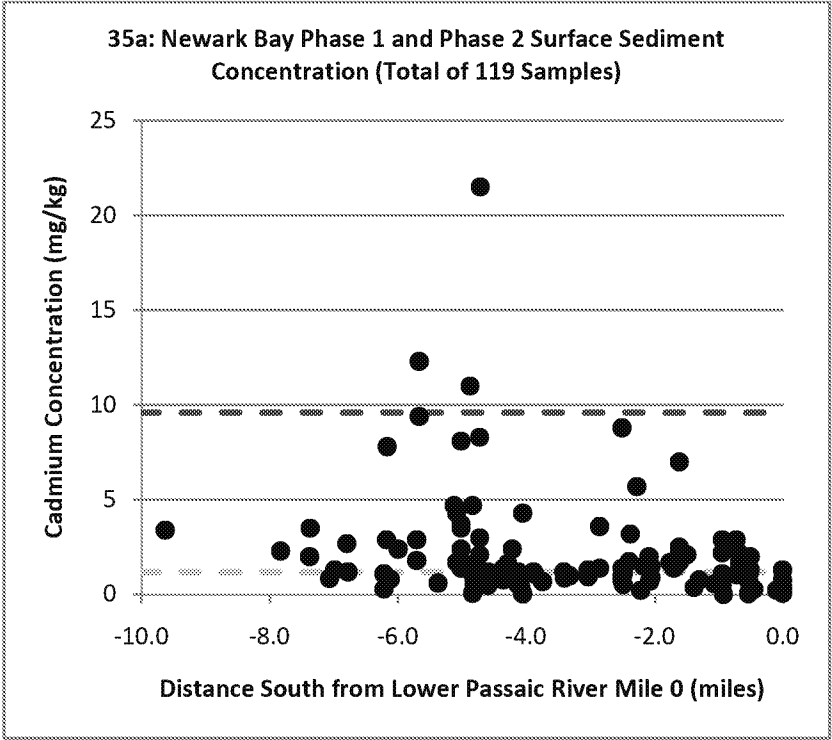
□ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

--- Navigation Channel (includes side slope)

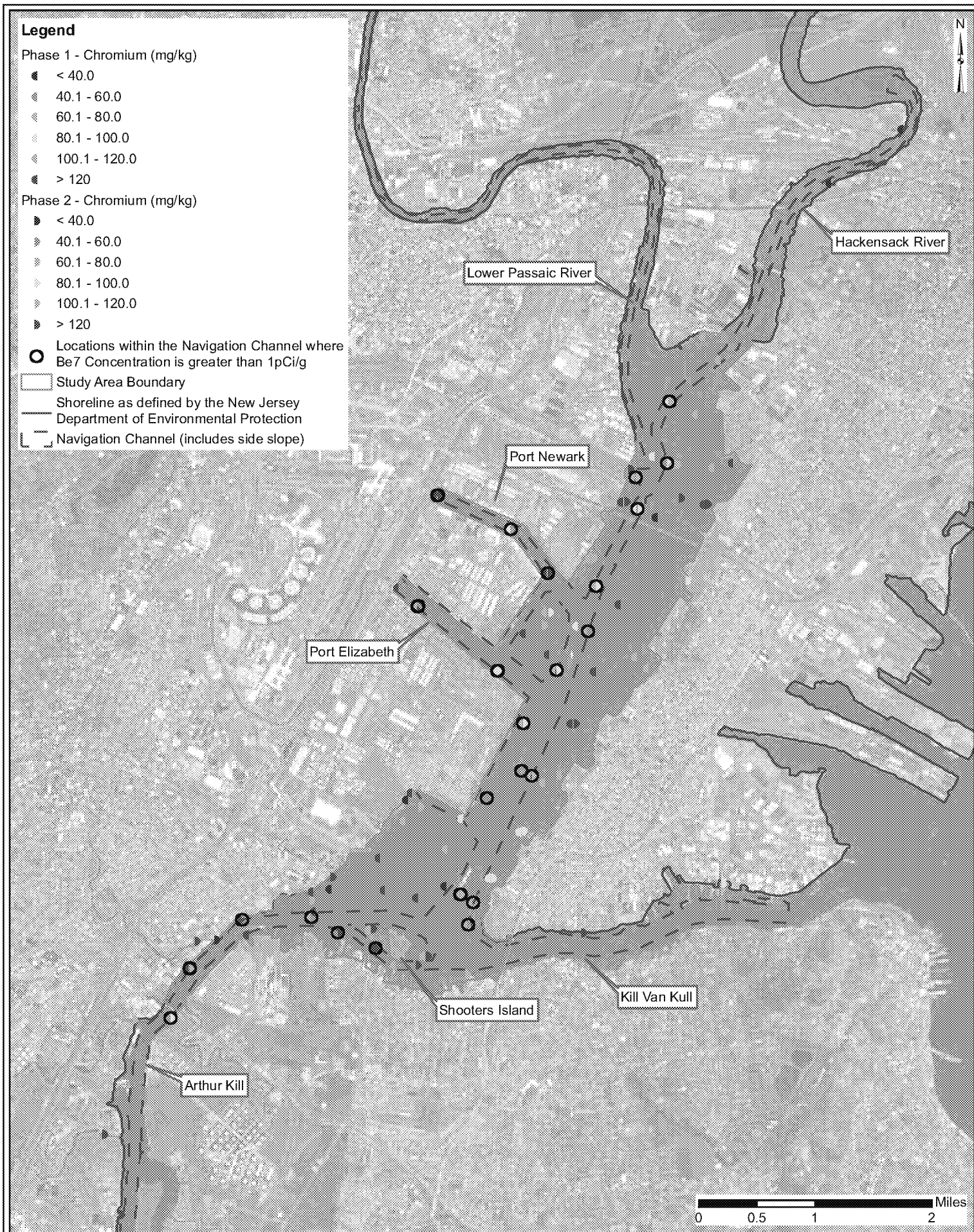
Note: Non-detect concentrations are plotted at half the reported value.



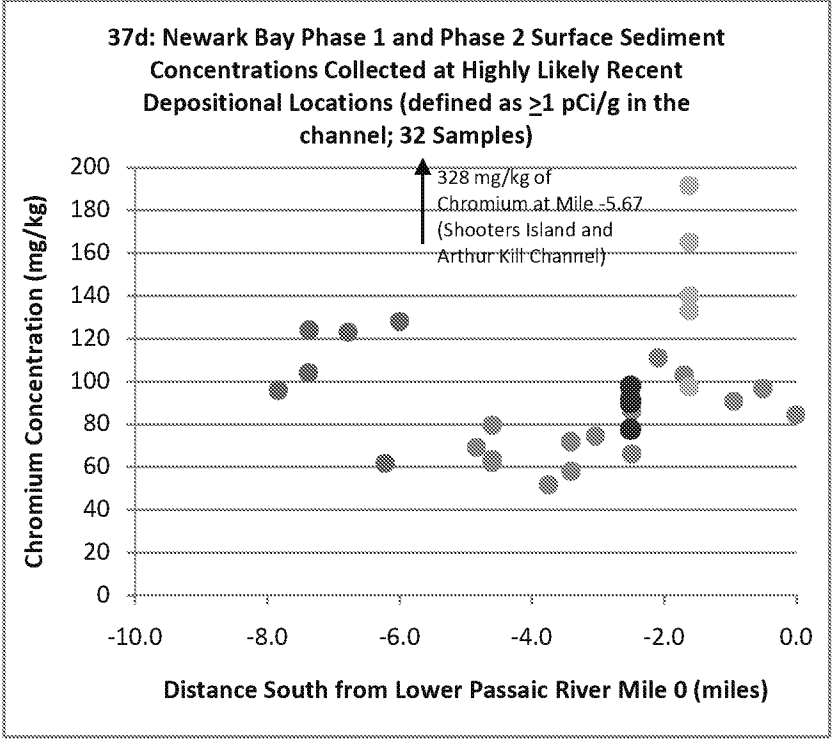
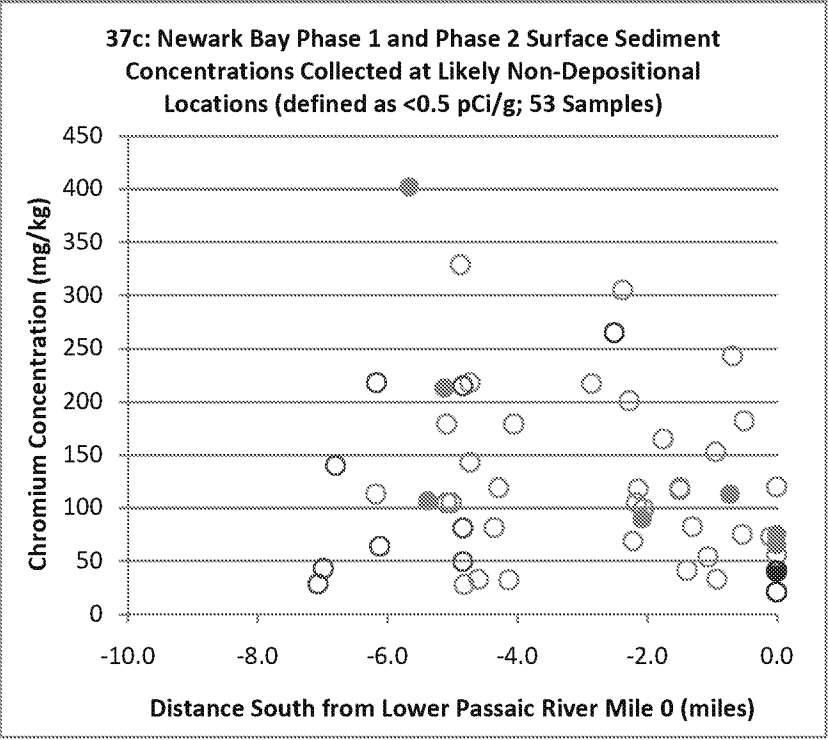
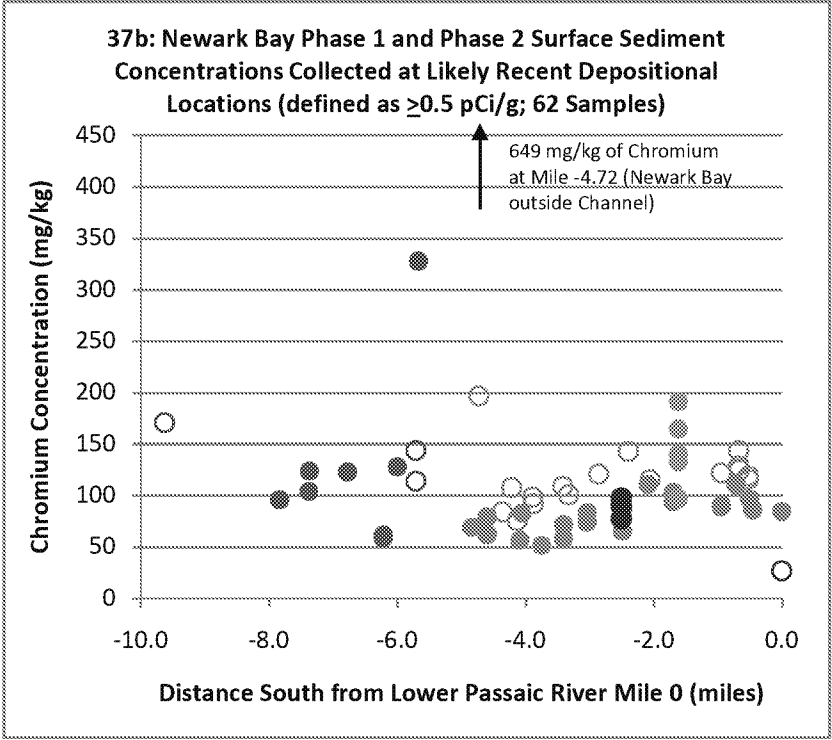
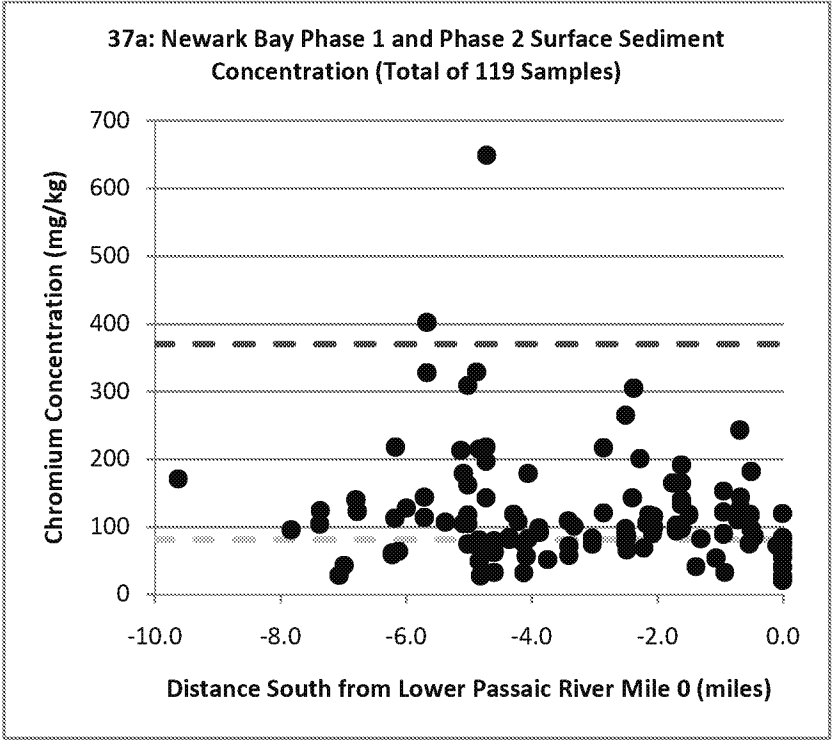


**Notes**

- Cadmium surface concentrations represent the top 6 inches of the core.
- When duplicate cadmium values are provided by the laboratory, the average concentration is plotted.
- Seven nondetect cadmium concentrations were reported for surface sediments. Nondetect concentrations are presented at half the detection limit.
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
- Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values are provided in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.







**Legend**

- All Phase 1 and 2 Sampling Locations
- Newark Bay Navigational Channel (includes side slopes)
- Newark Bay Outside of Channel
- Port Elizabeth Navigational Channel (includes side slopes)
- Port Elizabeth Outside of Channel
- Port Newark Navigational Channel (includes side slopes)
- Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
- Shooters Island and Arthur Kill Outside of Channel
- Hackensack River Navigational Channel (includes side slopes)
- Hackensack River Outside of Channel
- Kill Van Kull Outside of Channel
- NJDEP Effects Range – Low
- NJDEP Effects Range - Medium

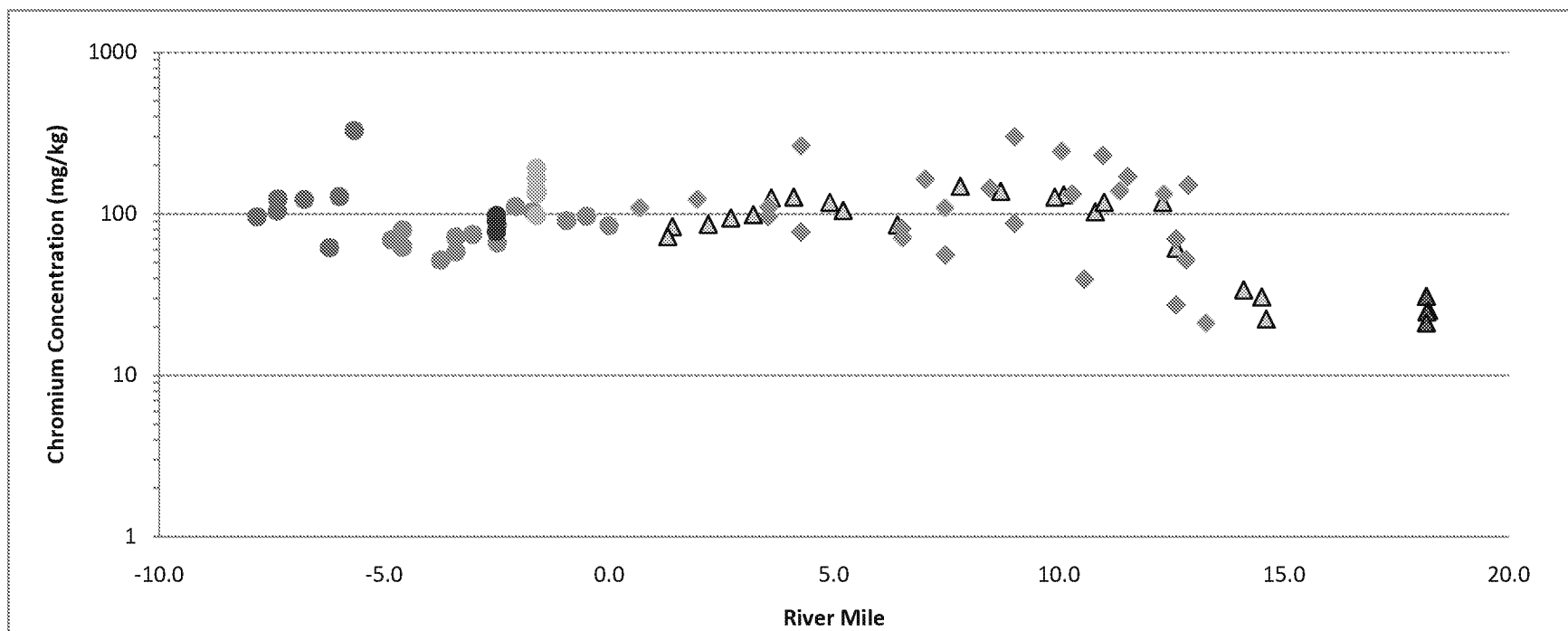
Notes

- Chromium surface concentrations represent the top 6 inches of the core.
- When duplicate chromium values are provided by the laboratory, the average concentration is plotted.
- No nondetect chromium concentrations were reported in surface sediment samples.
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
- Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values are provided in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.



Chromium Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

October 2010  
Figure 37



#### Legend

- Newark Bay Navigational Channel (includes side slopes; TSI 2005/2007)
- Port Elizabeth Navigational Channel (includes side slopes; TSI 2005/2007)
- Port Newark Navigational Channel (includes side slopes; TSI 2005/2007)
- Shooters Island and Arthur Kill Navigational Channel (includes side slopes; TSI 2005/2007)
- ▲ Lower Passaic River (MPI 2008)
- ▲ Upper Passaic River (MPI 2008)
- ◆ Lower Passaic River (CPG 2008)

#### Notes

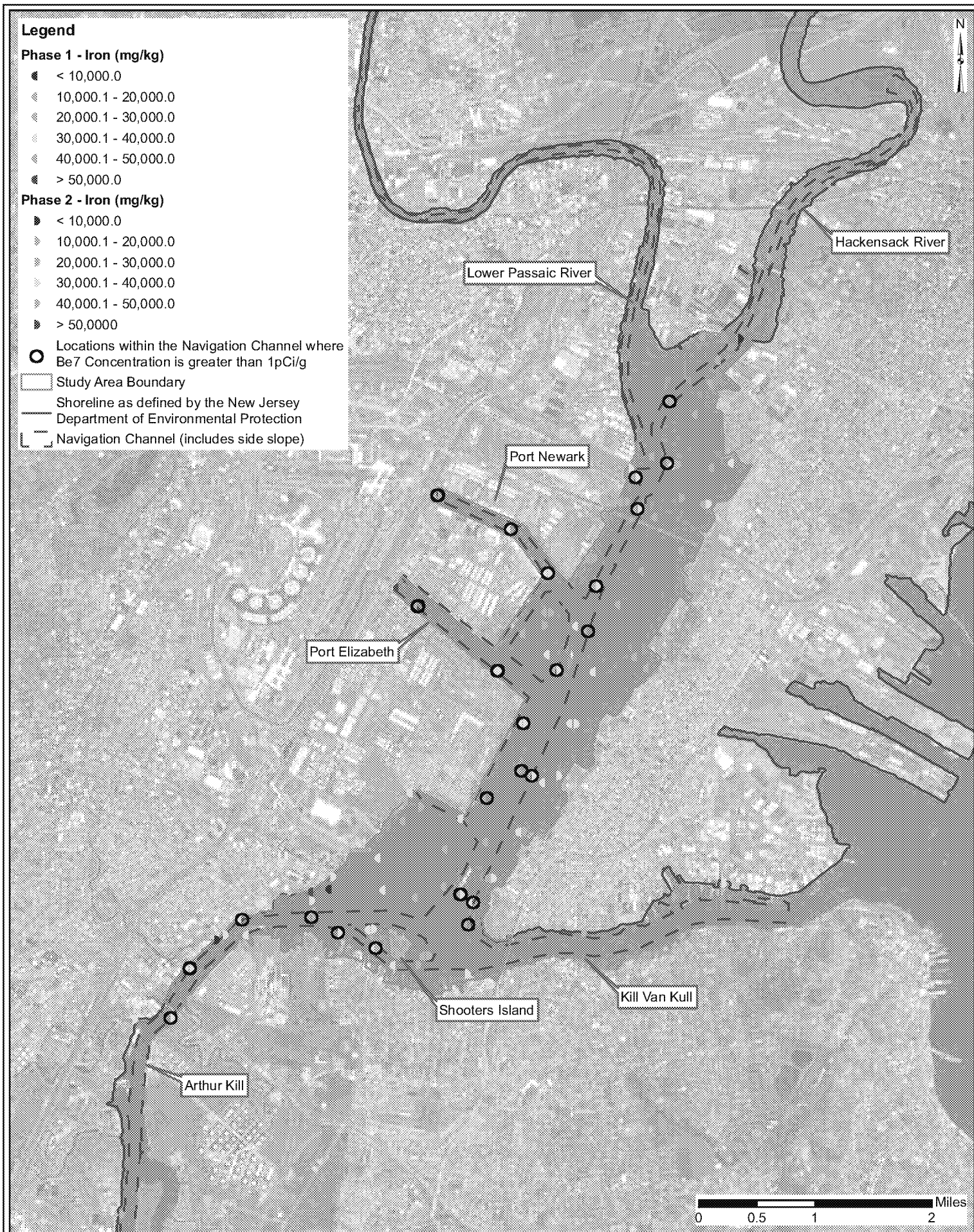
- 1- Newark Bay Phase 1 and Phase 2 surface sediment concentrations collected at highly likely recent depositional locations (defined as  $\geq 1$  pCi/g in the channel; 32 samples).
- 2- Lower Passaic River surface sediment concentrations collected at likely recent depositional locations (defined as  $\geq 0.5$  pCi/g in the channel; 21 samples).
- 3- Upper Passaic River surface sediment concentrations collected at likely recent depositional locations (defined as  $\geq 0.5$  pCi/g in the channel; 4 samples).
- 4- Lower Passaic River CPG 2008 surface sediment concentrations collected at highly likely recent depositional locations (defined as  $\geq 1$  pCi/g; 26 samples).

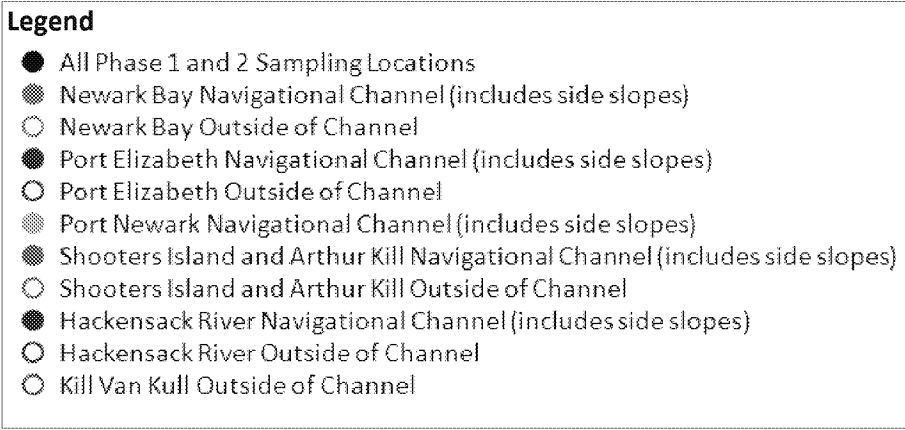
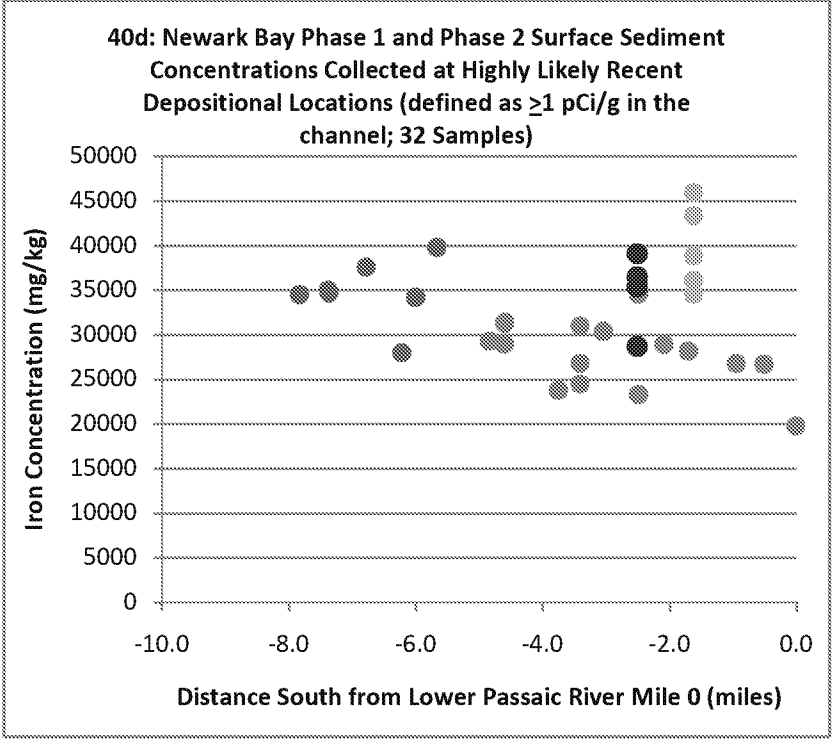
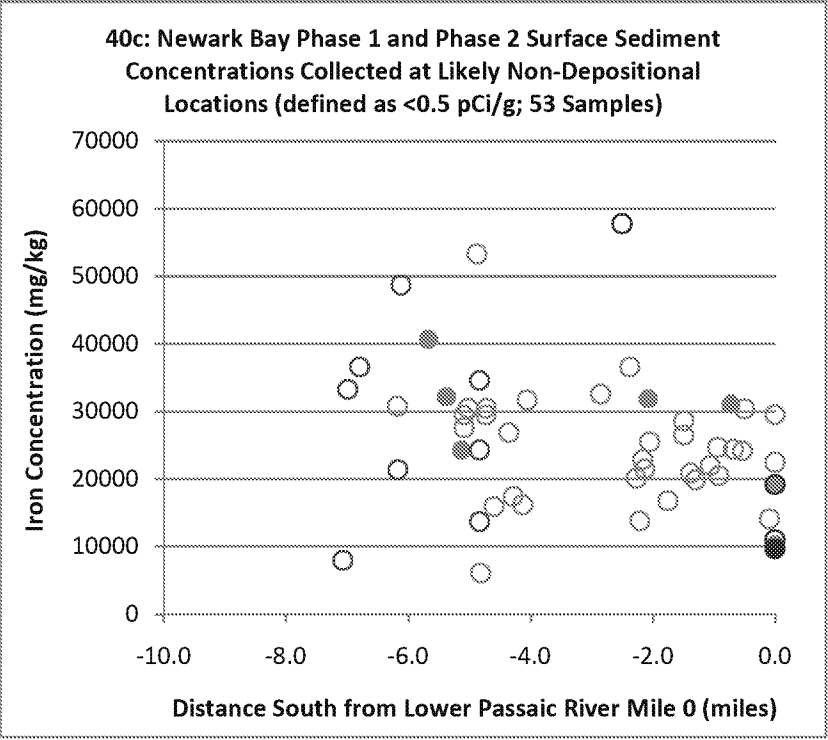
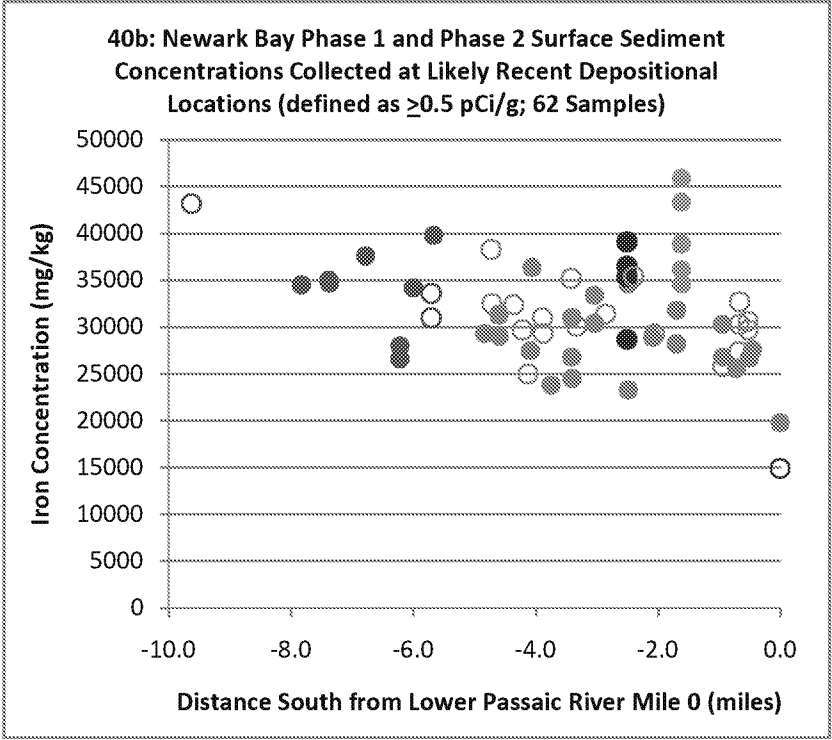
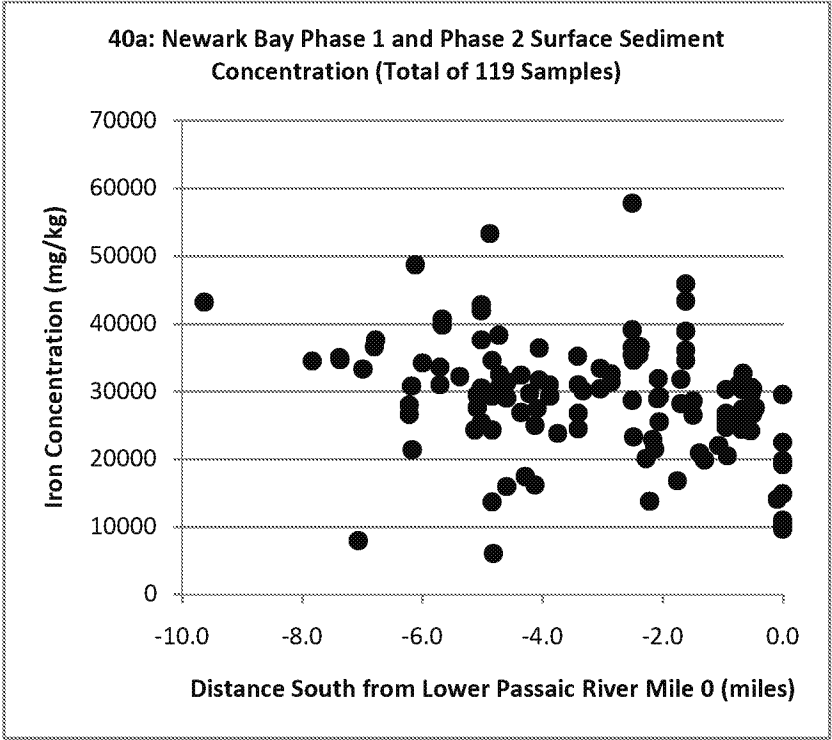


Chromium Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

October 2010

Figure 38





**Notes**

1. Iron surface concentrations represent the top 6 inches of the core.
2. When duplicate iron values are provided by the laboratory, the average concentration is plotted.
3. No nondetect iron concentrations were reported in surface sediment samples.
4. Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
5. Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.
6. Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
7. Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values for iron are not available in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.





## Legend

### Phase 1 - Aluminum (mg/kg)

- ◀ < 5,000.0
- ◀ 5,000.1 - 10,000.0
- ◀ 10,000.1 - 15,000.0
- ◀ 15,000.1 - 20,000.0
- ◀ 20,000.1 - 25,000.0
- ◀ > 25,000.1

### Phase 2 - Aluminum (mg/kg)

- ▶ < 5,000.0
- ▶ 5,000.1 - 10,000.0
- ▶ 10,000.1 - 15,000.0
- ▶ 15,000.1 - 20,000.0
- ▶ 20,000.1 - 25,000.0
- ▶ > 25,000.1

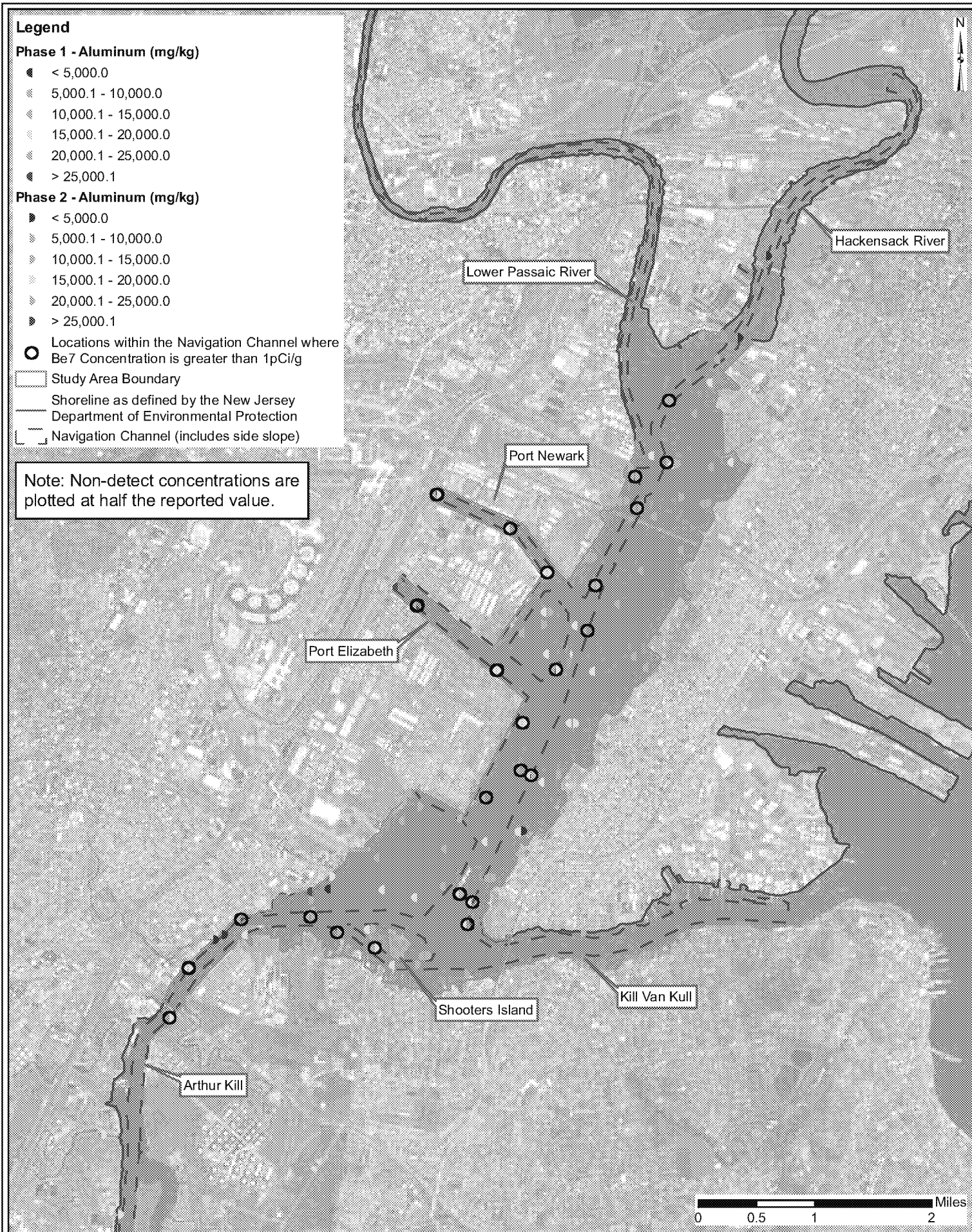
○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

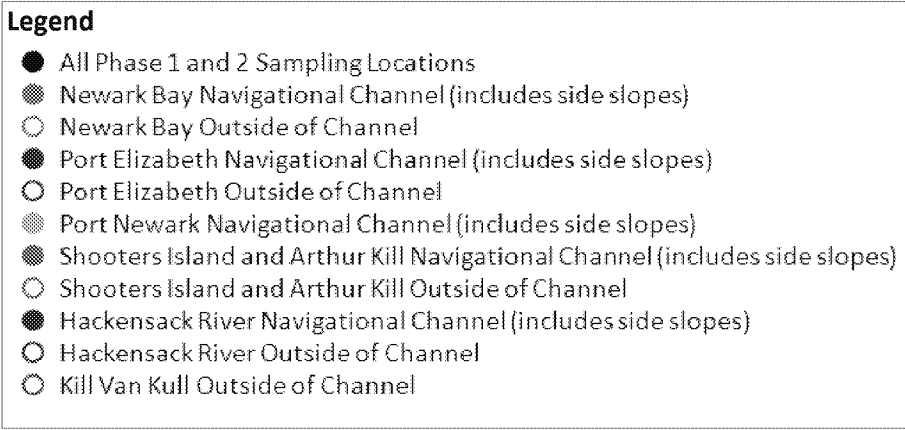
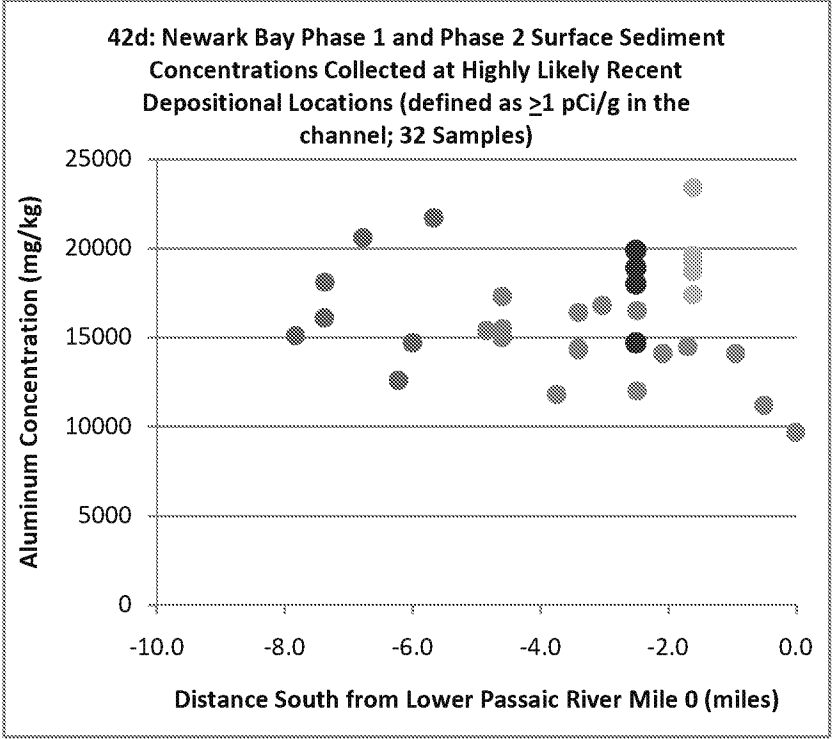
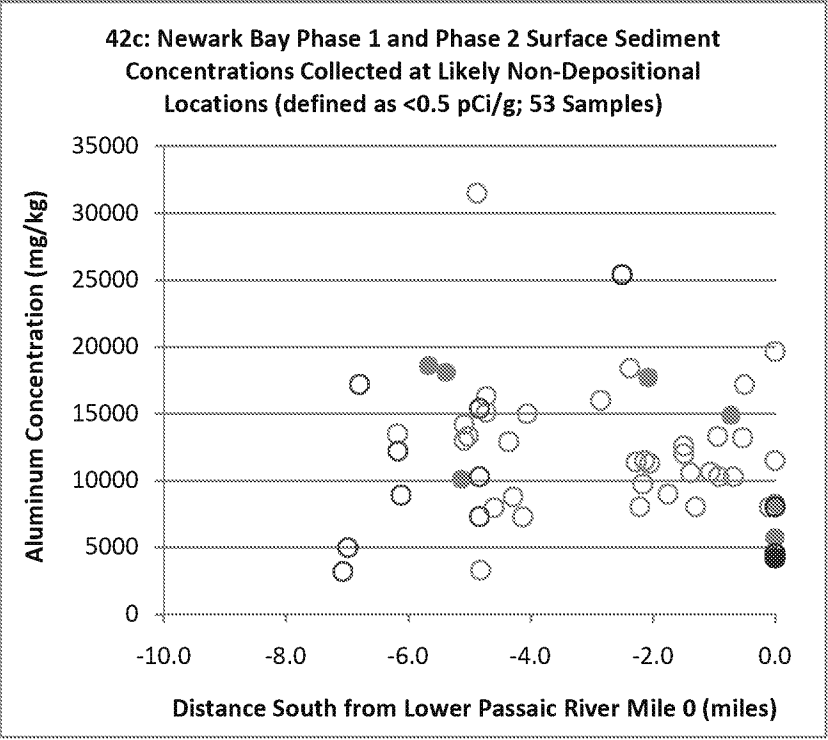
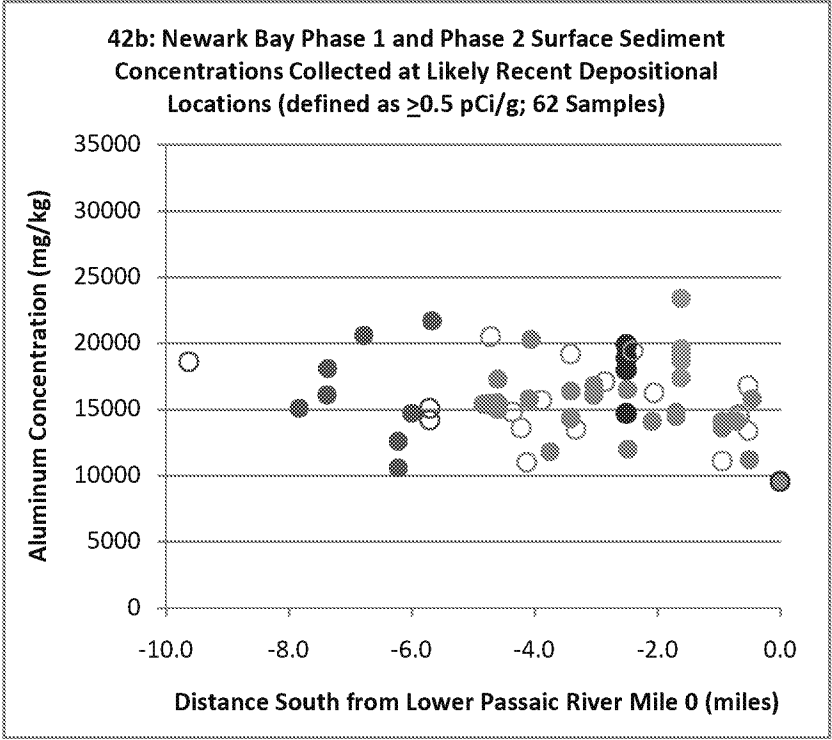
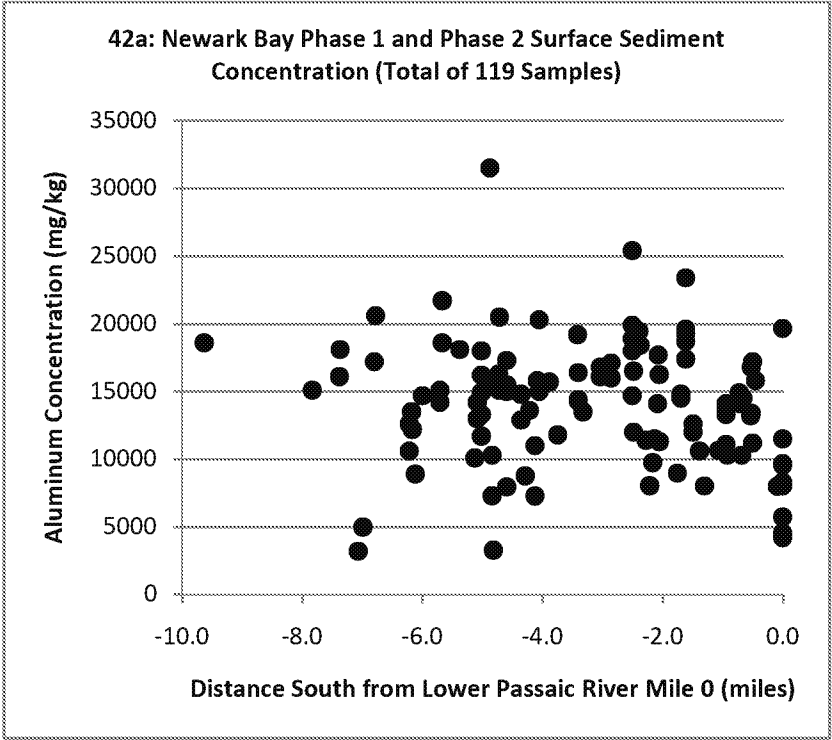
□ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)

Note: Non-detect concentrations are plotted at half the reported value.





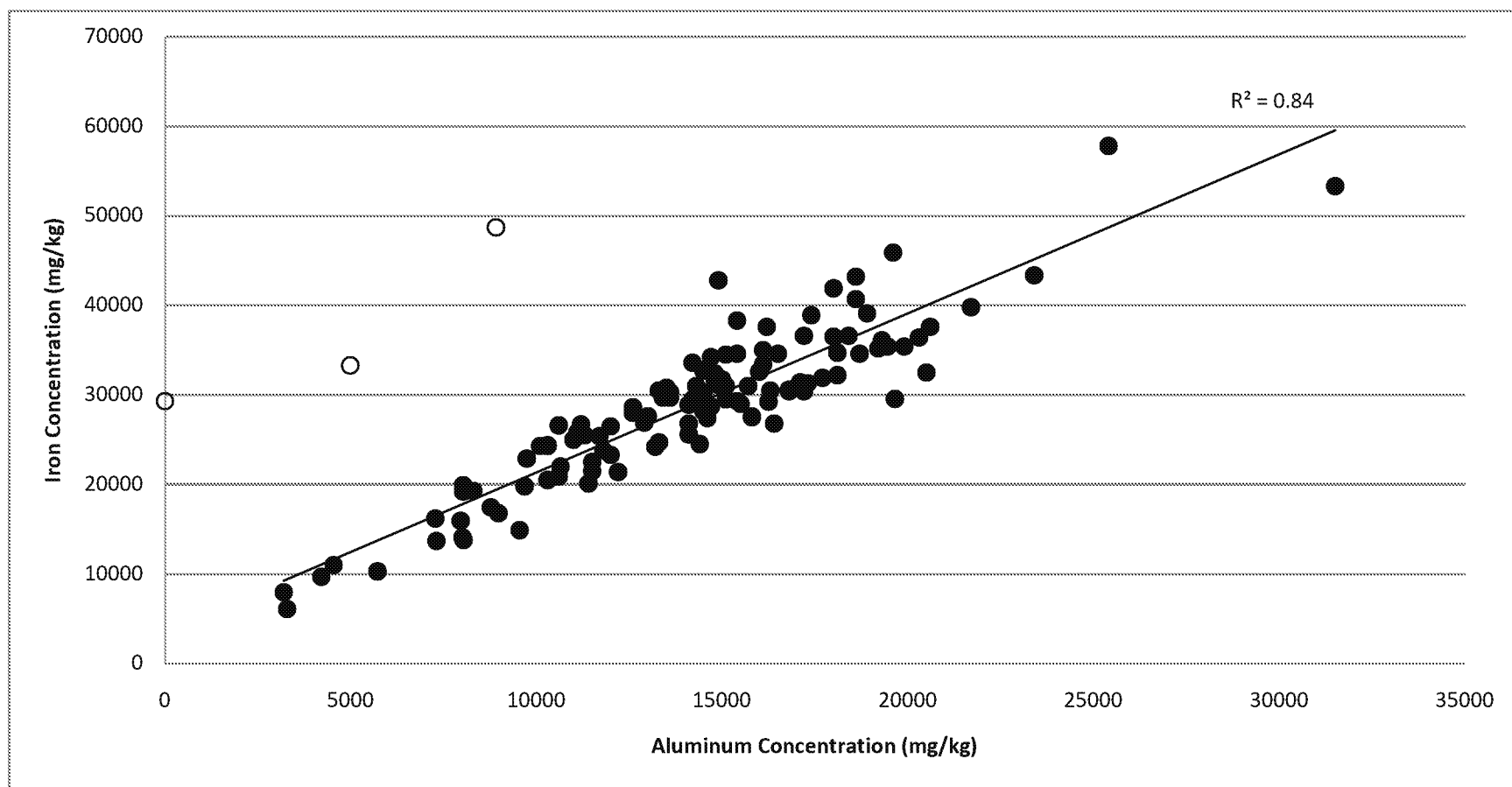
Notes

- Aluminum surface concentrations represent the top 6 inches of the core.
- When duplicate aluminum values were provided by the laboratory, the average concentration is plotted.
- One nondetect aluminum concentration was reported for surface sediments and not plotted (NB025ED072).
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.
- Effects Range - Low (ER-L) or Effects Range - Medium (ER-M) values for aluminum are not available in the November 1998 New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations.



Aluminum Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

October 2010  
Figure 42



#### Legend

- Surface Sediment (0-6 inch) Included in Regression
- Surface Sediment (0-6 inch) Excluded from Regression

#### Notes

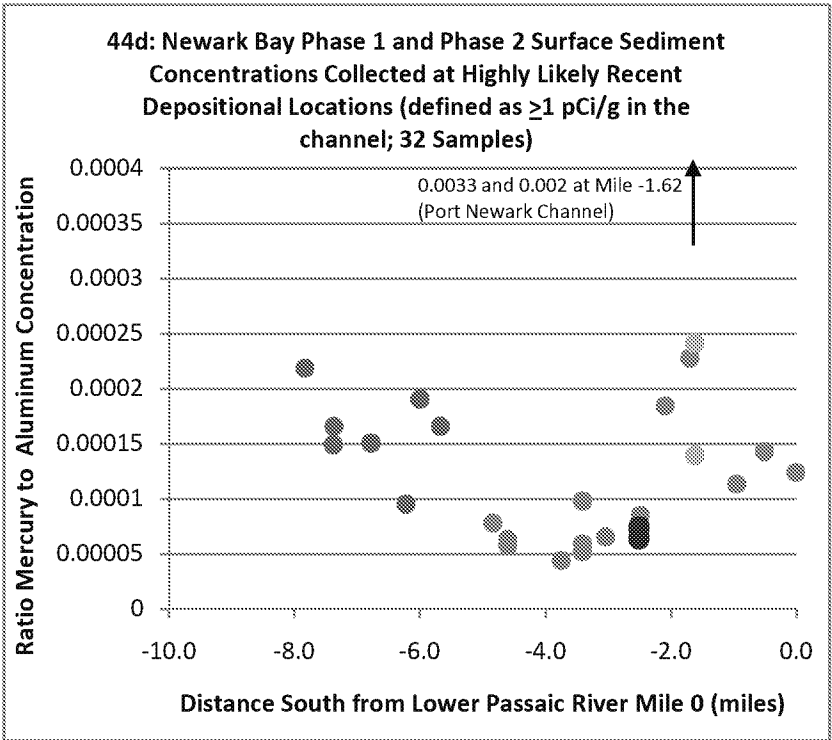
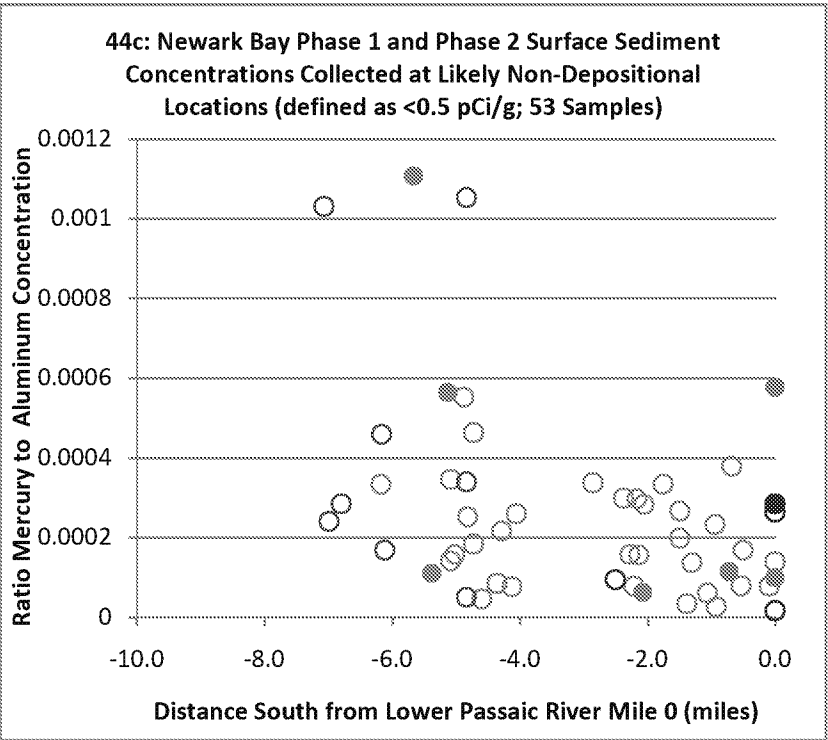
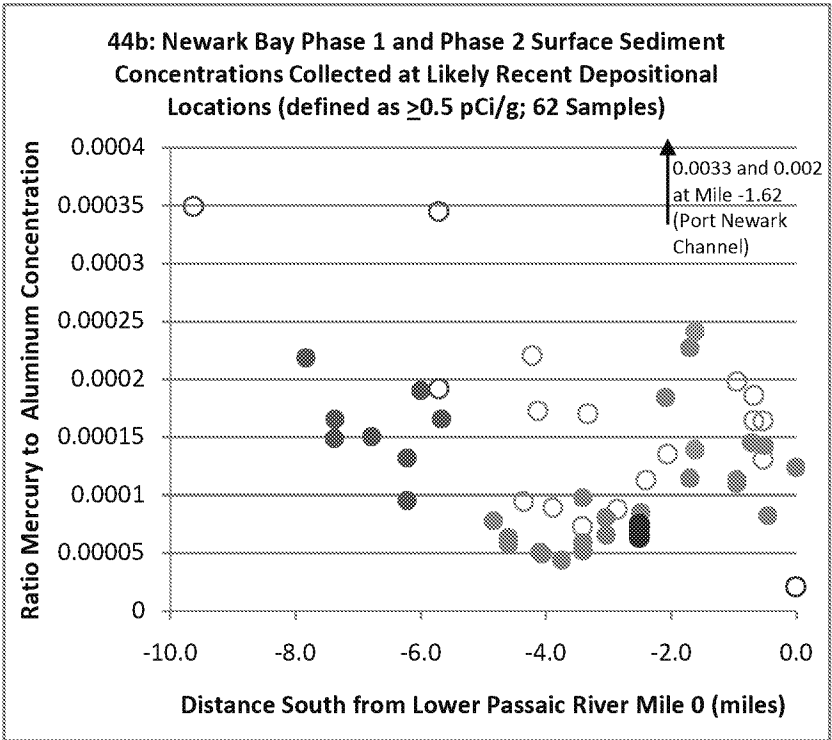
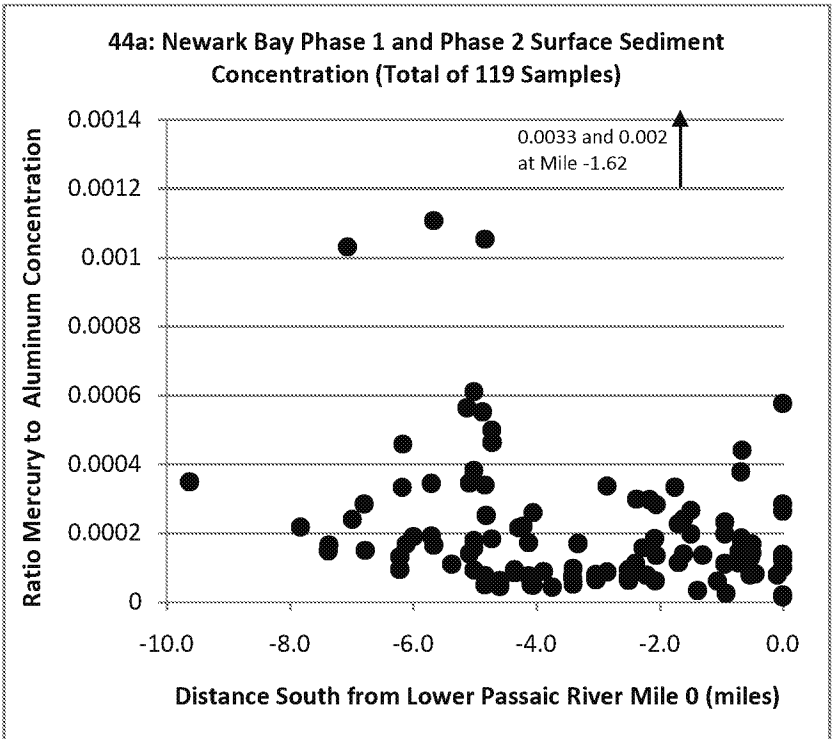
1. Sample NB02SED072-1 was not included in the trendline because Aluminum is not detected.
2. Samples NB01SED003-1 and NB02SED088-1 were not included in the trendline because the samples produce outliers.



Correlation between Iron and Aluminum for Newark Bay  
Phase 1 and Phase 2 Surface Sediment  
*Newark Bay RI/FS Oversight*

August 2010

Figure 43



- Legend**
- All Phase 1 and 2 Sampling Locations
  - Newark Bay Navigational Channel (includes side slopes)
  - Newark Bay Outside of Channel
  - Port Elizabeth Navigational Channel (includes side slopes)
  - Port Elizabeth Outside of Channel
  - Port Newark Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Outside of Channel
  - Hackensack River Navigational Channel (includes side slopes)
  - Hackensack River Outside of Channel
  - Kill Van Kull Outside of Channel

**Notes**

1. Mercury and aluminum surface concentrations represent the top 6 inches of the core.

2. When duplicate mercury or aluminum values were provided by the laboratory, the average concentration is used in the ratio.

3. No nondetect mercury concentrations were reported in surface sediment samples. One nondetect aluminum concentration was reported for surface sediments and not plotted (NB02SED072).

4. Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.

5. Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.

6. Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.

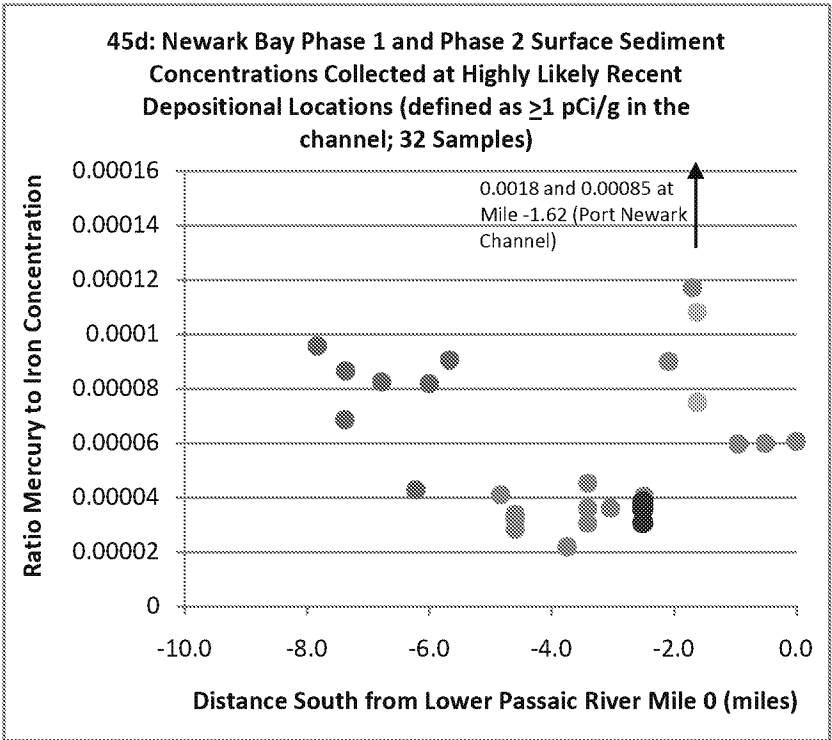
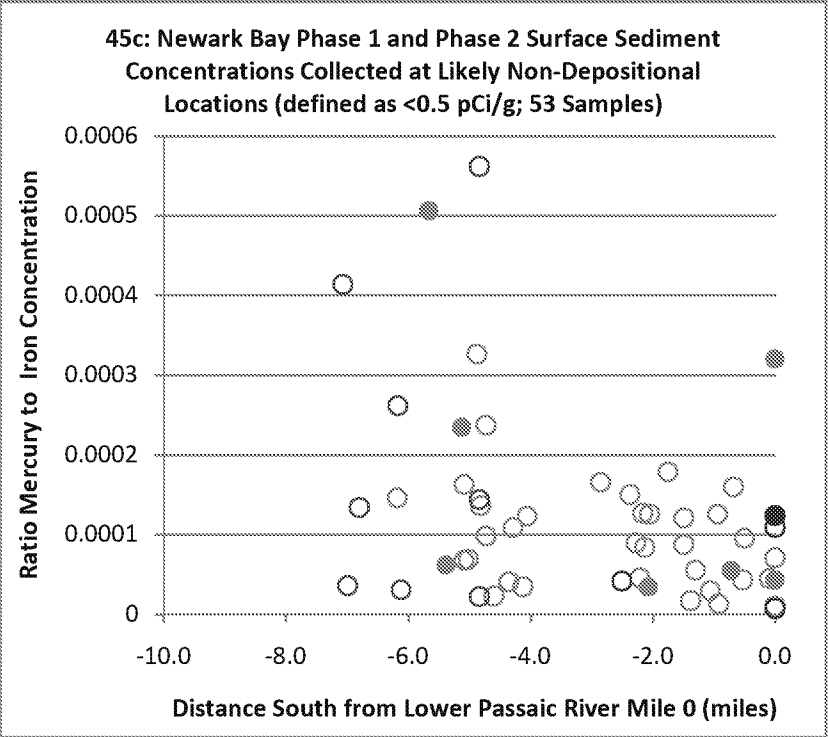
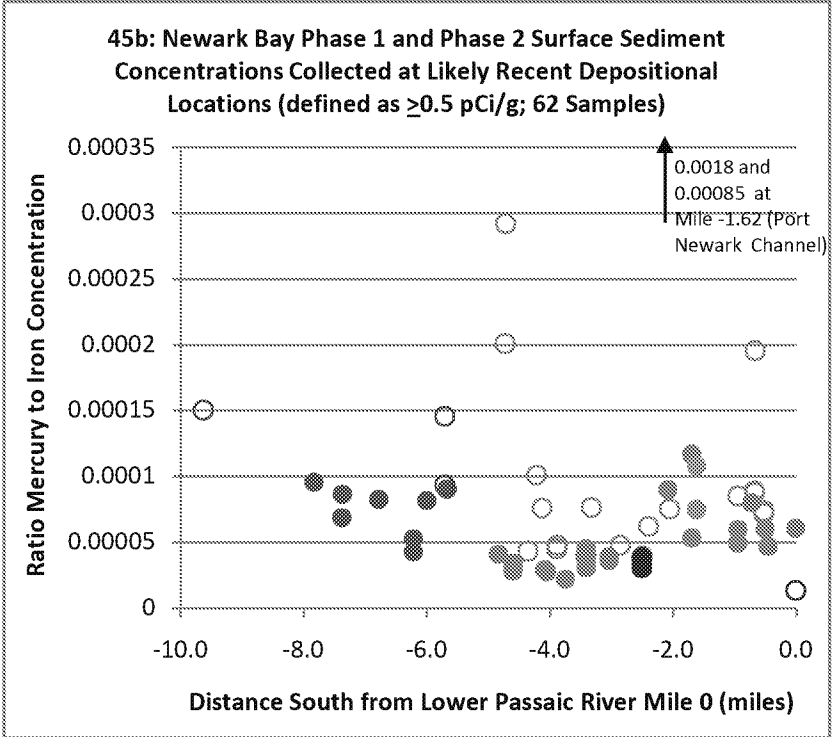
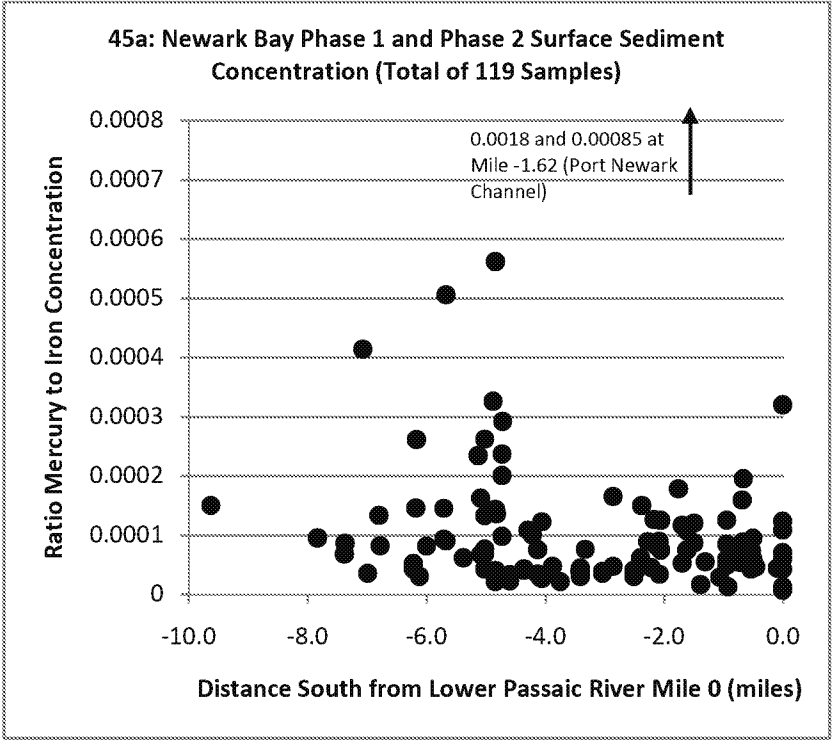


Ratio of Mercury to Aluminum Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

October 2010

Figure 44





- Legend**
- All Phase 1 and 2 Sampling Locations
  - Newark Bay Navigational Channel (includes side slopes)
  - Newark Bay Outside of Channel
  - Port Elizabeth Navigational Channel (includes side slopes)
  - Port Elizabeth Outside of Channel
  - Port Newark Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Outside of Channel
  - Hackensack River Navigational Channel (includes side slopes)
  - Hackensack River Outside of Channel
  - Kill Van Kull Outside of Channel

**Notes**

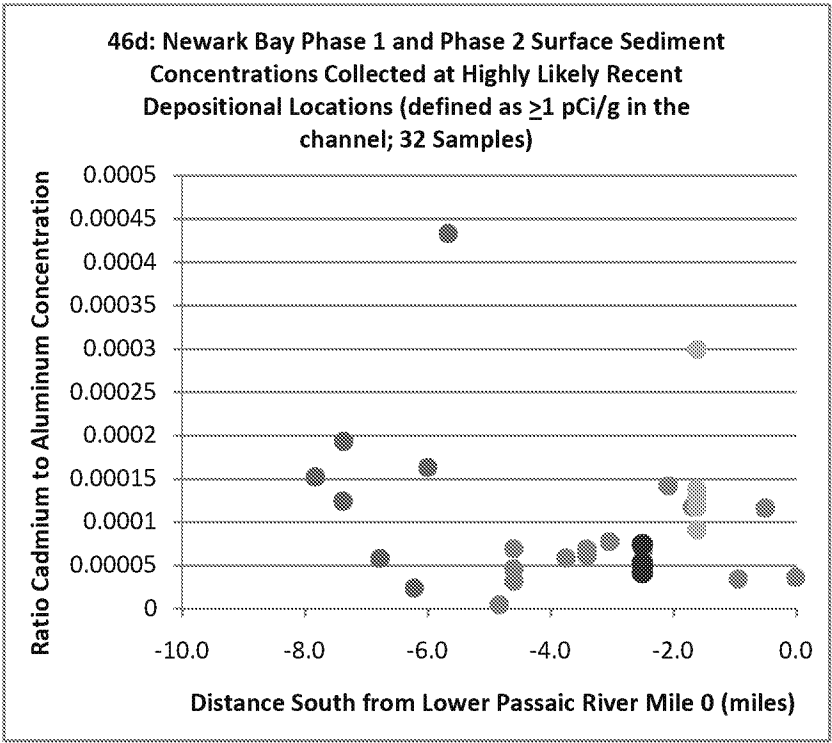
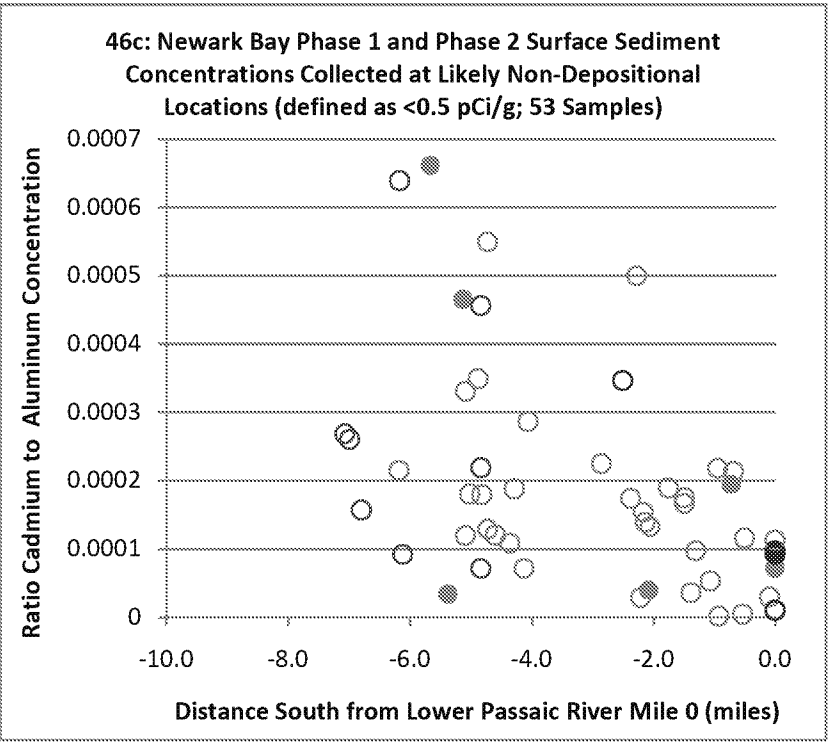
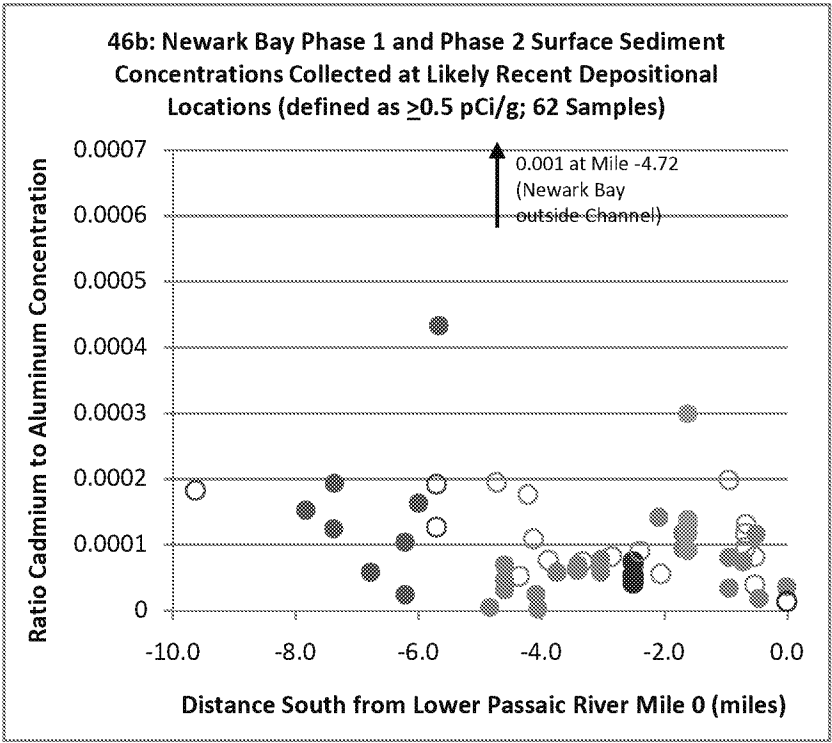
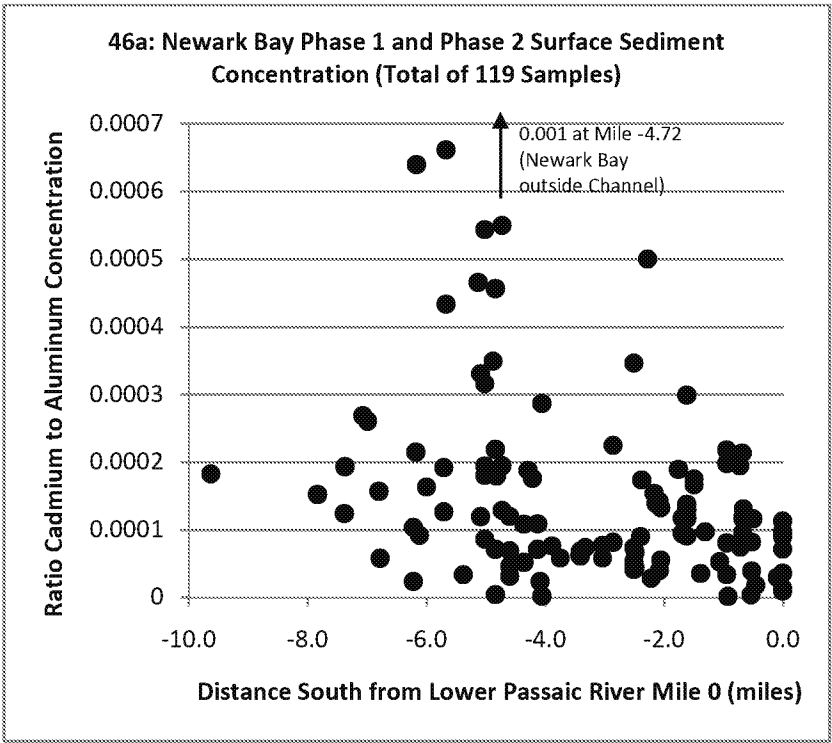
- Mercury and iron surface concentrations represent the top 6 inches of the core.
- When duplicate mercury or iron values are provided by the laboratory, the average concentration is used in the ratio.
- No nondetect mercury or iron concentrations were reported in surface sediment samples.
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile -1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.



Ratio of Mercury to Iron Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

October 2010

Figure 45

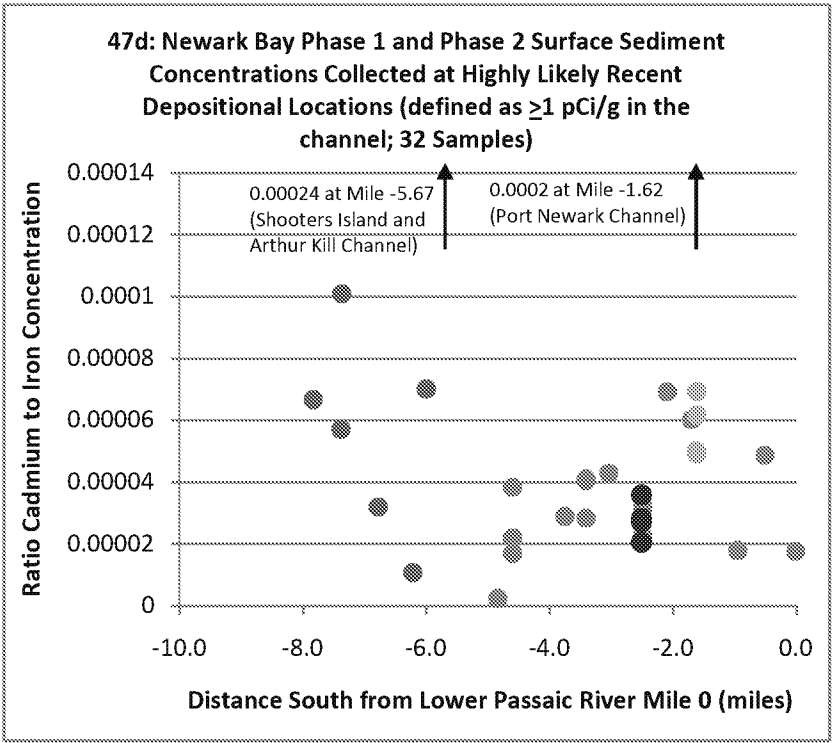
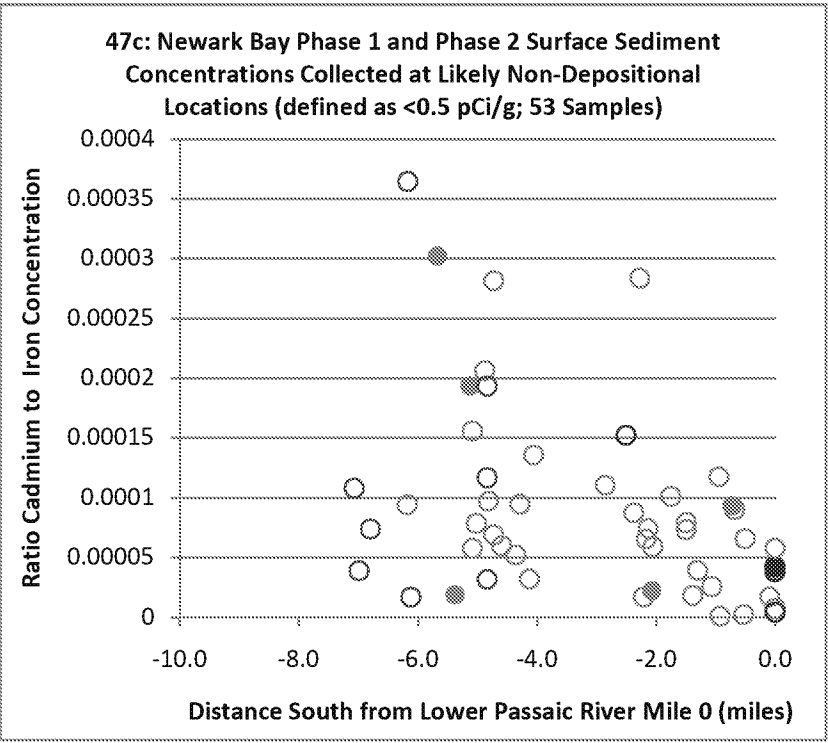
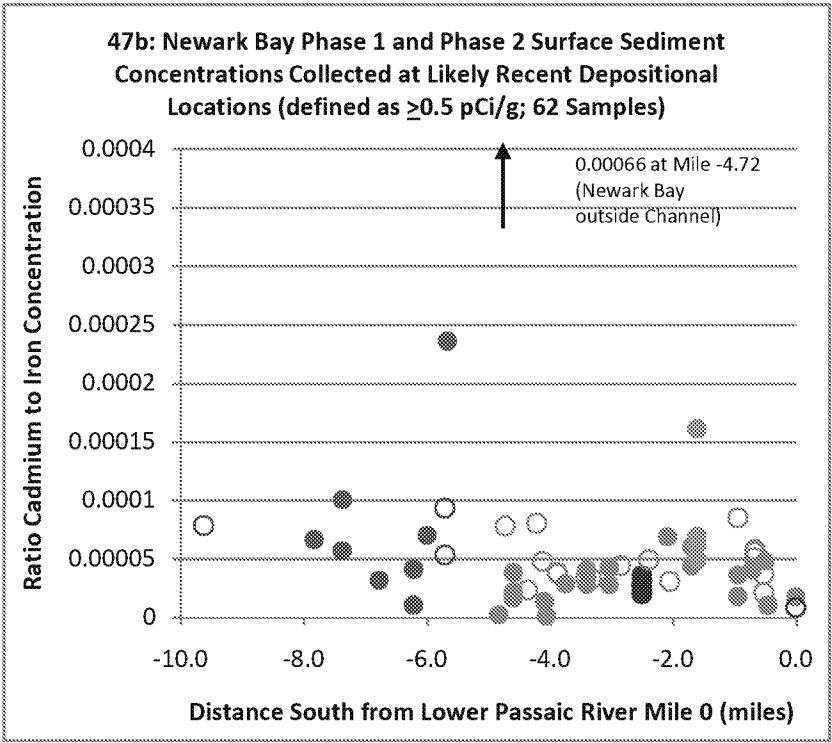
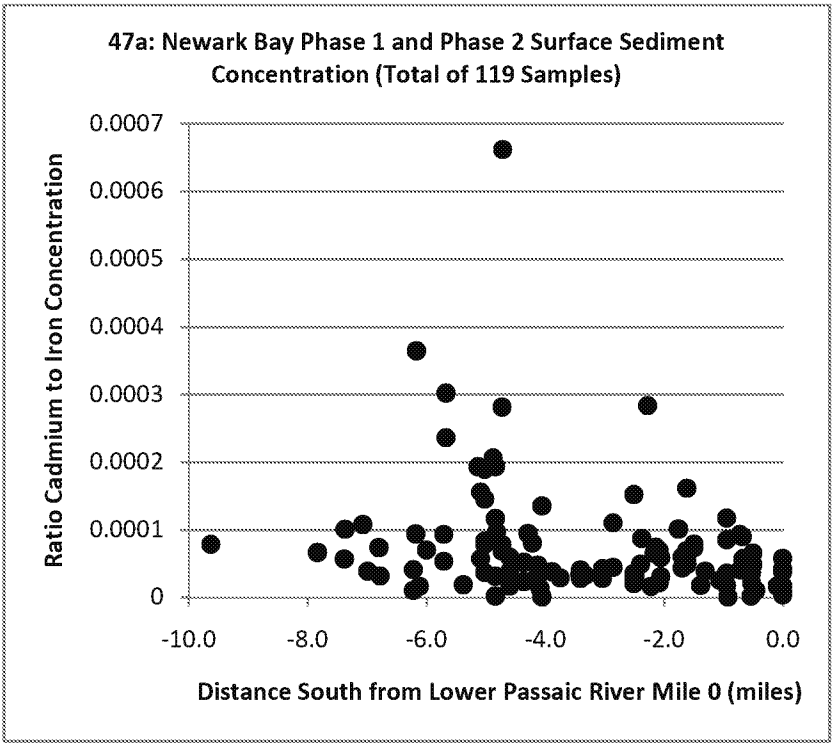


- Legend**
- All Phase 1 and 2 Sampling Locations
  - Newark Bay Navigational Channel (includes side slopes)
  - Newark Bay Outside of Channel
  - Port Elizabeth Navigational Channel (includes side slopes)
  - Port Elizabeth Outside of Channel
  - Port Newark Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Outside of Channel
  - Hackensack River Navigational Channel (includes side slopes)
  - Hackensack River Outside of Channel
  - Kill Van Kull Outside of Channel

**Notes**

- Cadmium and aluminum surface concentrations represent the top 6 inches of the core.
- When duplicate cadmium or aluminum values are provided by the laboratory, the average concentration is used in the ratio.
- Seven nondetect cadmium concentrations were reported. One nondetect aluminum concentration was reported for surface sediments and not plotted (NB02SED072).
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.





- Legend**
- All Phase 1 and 2 Sampling Locations
  - Newark Bay Navigational Channel (includes side slopes)
  - Newark Bay Outside of Channel
  - Port Elizabeth Navigational Channel (includes side slopes)
  - Port Elizabeth Outside of Channel
  - Port Newark Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Outside of Channel
  - Hackensack River Navigational Channel (includes side slopes)
  - Hackensack River Outside of Channel
  - Kill Van Kull Outside of Channel

**Notes**

1. Cadmium and iron surface concentrations represent the top 6 inches of the core.

2. When duplicate cadmium or iron values are provided by the laboratory, the average concentration is used in the ratio.

3. No nondetect iron concentrations were reported. Seven nondetect cadmium concentrations were reported for surface sediments. Nondetect concentrations are designated as half the detection limit.

4. Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source tracking). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.

5. Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.

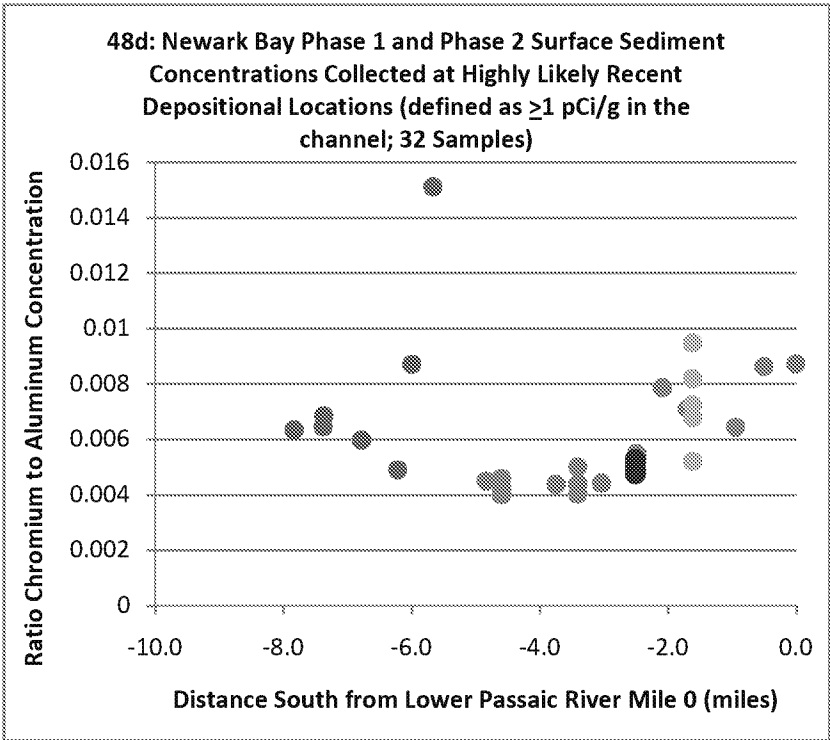
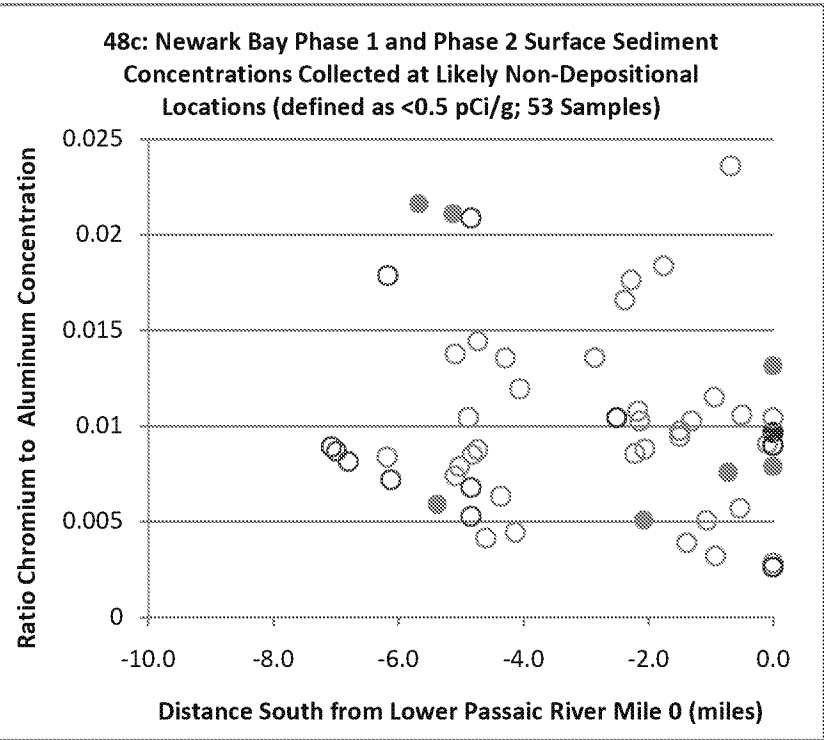
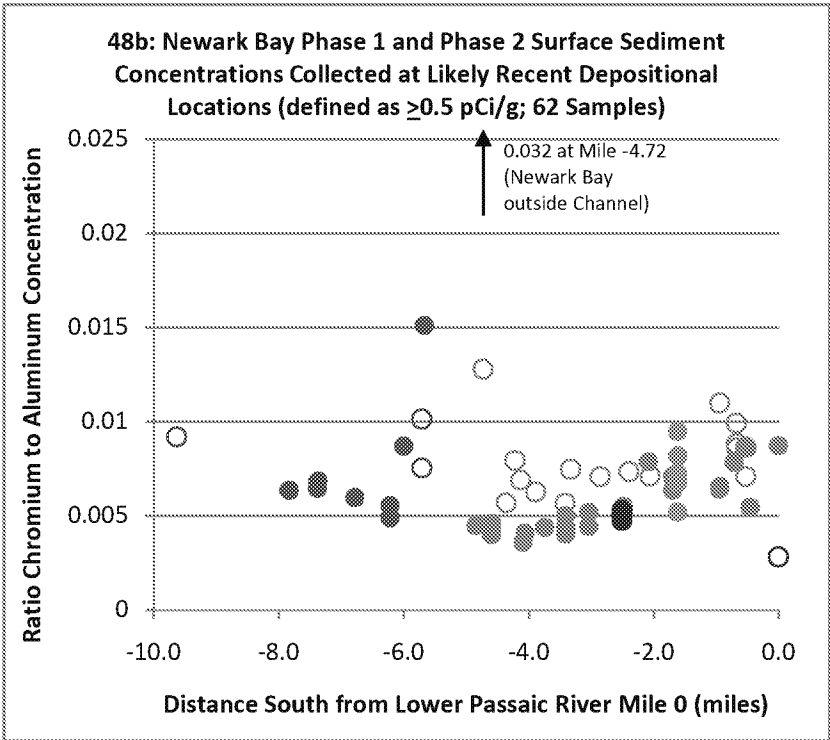
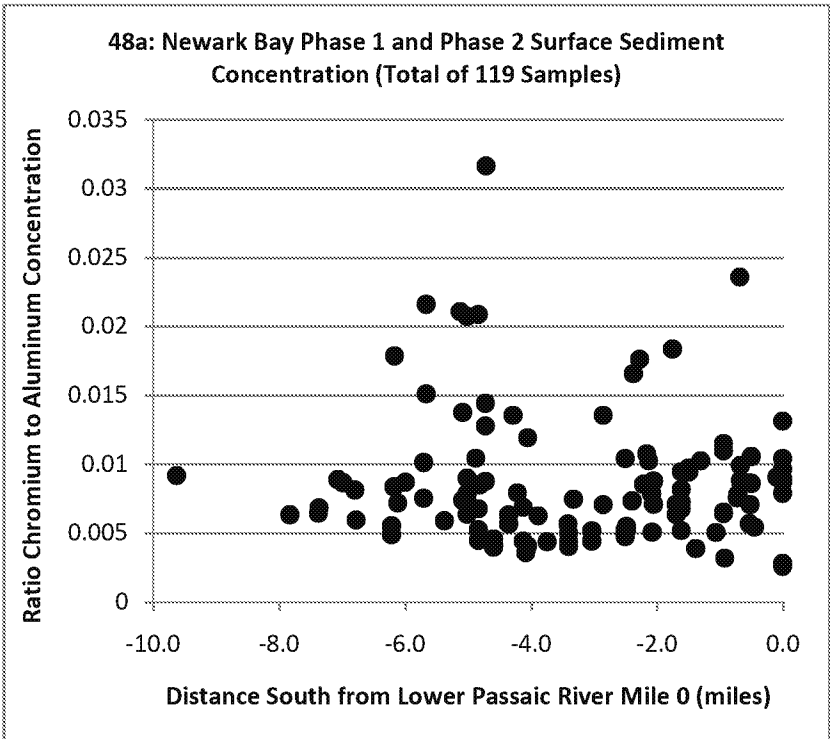
6. Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.



Ratio of Cadmium to Iron Surface Sediment Concentrations  
*Newark Bay RI/FS Oversight*

October 2010

Figure 47



- Legend**
- All Phase 1 and 2 Sampling Locations
  - Newark Bay Navigational Channel (includes side slopes)
  - Newark Bay Outside of Channel
  - Port Elizabeth Navigational Channel (includes side slopes)
  - Port Elizabeth Outside of Channel
  - Port Newark Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Outside of Channel
  - Hackensack River Navigational Channel (includes side slopes)
  - Hackensack River Outside of Channel
  - Kill Van Kull Outside of Channel

**Notes**

- Chromium and aluminum surface concentrations represent the top 6 inches of the core.
- When duplicate chromium or aluminum values are provided by the laboratory, the average concentration is plotted.
- No nondetect chromium concentrations were reported. One nondetect aluminum concentration was reported for surface sediments and not plotted (NB02SED072).
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.

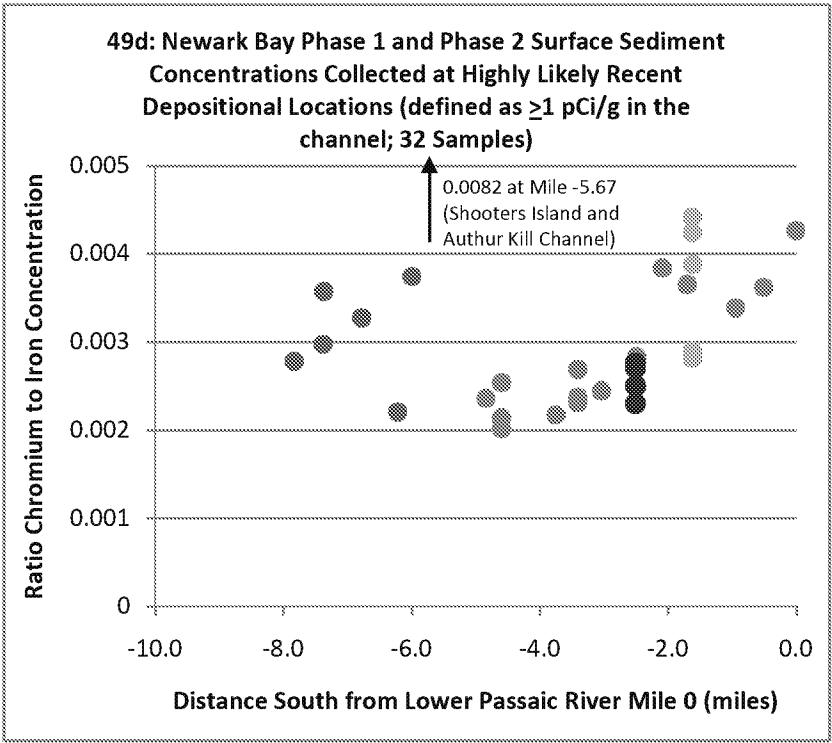
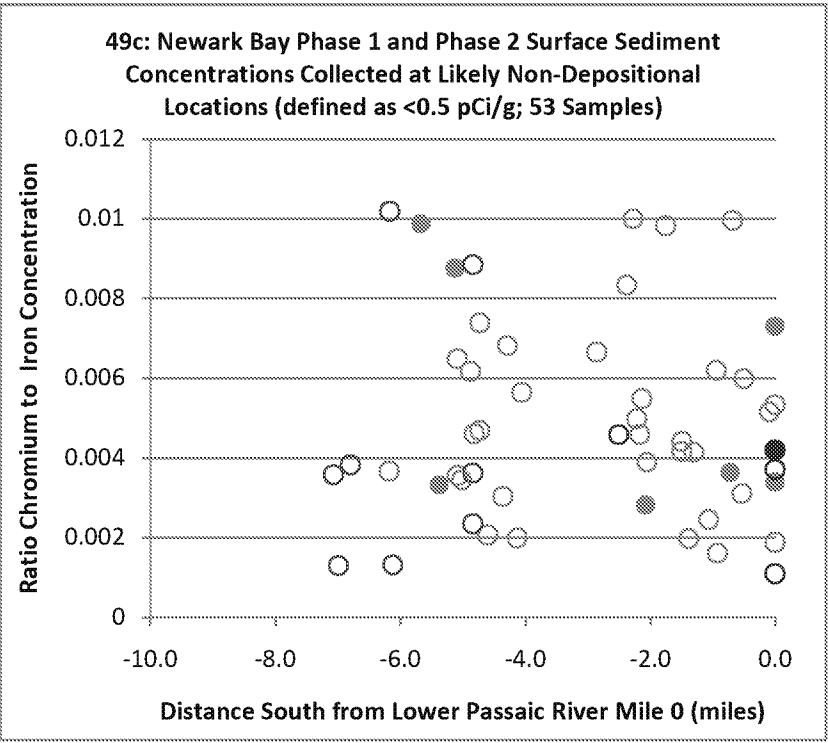
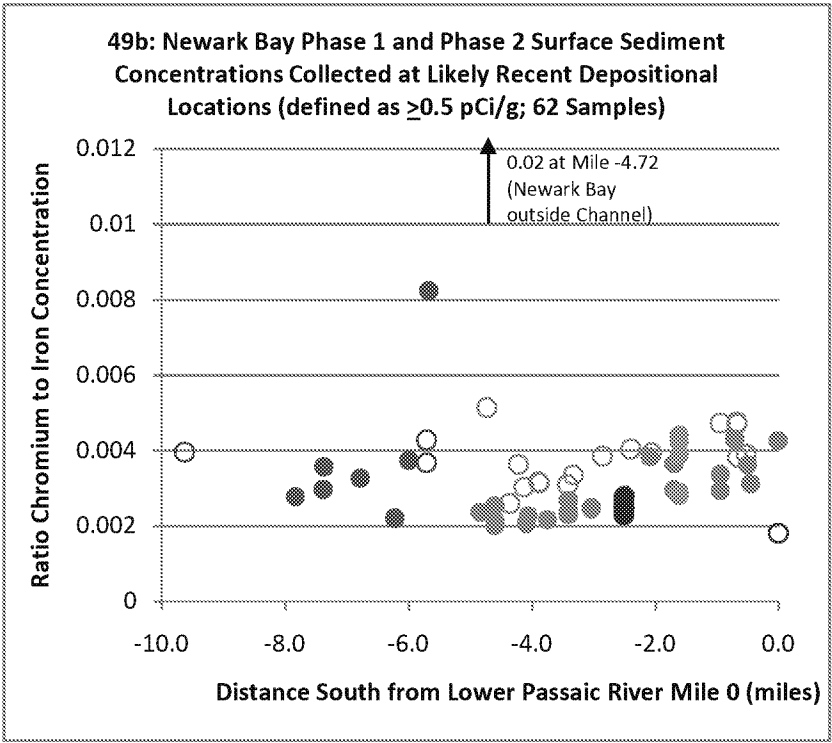
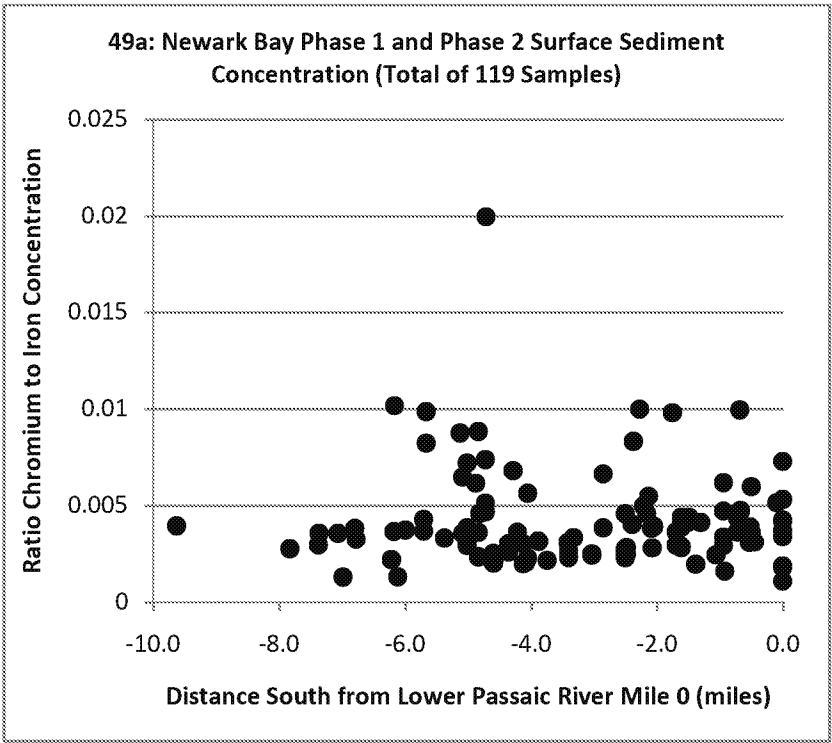


Ratio of Chromium to Aluminum Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

October 2010

Figure 48





- Legend**
- All Phase 1 and 2 Sampling Locations
  - ▨ Newark Bay Navigational Channel (includes side slopes)
  - Newark Bay Outside of Channel
  - ▨ Port Elizabeth Navigational Channel (includes side slopes)
  - Port Elizabeth Outside of Channel
  - ▨ Port Newark Navigational Channel (includes side slopes)
  - ▨ Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Outside of Channel
  - ▨ Hackensack River Navigational Channel (includes side slopes)
  - Hackensack River Outside of Channel
  - Kill Van Kull Outside of Channel

**Notes**

- Chromium and iron surface concentrations represent the top 6 inches of the core.
- When duplicate chromium or iron values are provided by the laboratory, the average concentration is used in the ratio.
- No nondetect chromium or iron concentrations were reported in surface sediment samples.
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.



Ratio of Chromium to Iron Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

October 2010

Figure 49

## Legend

### Phase 1 - TOC (mg/kg)

- ◀ < 3,000.0
- ◀ 3,000.1 - 10,000.0
- ◀ 10,000.1 - 30,000.0
- ◀ 30,000.1 - 100,000.0
- ◀ > 100,000.1

### Phase 1 - TOC (mg/kg)

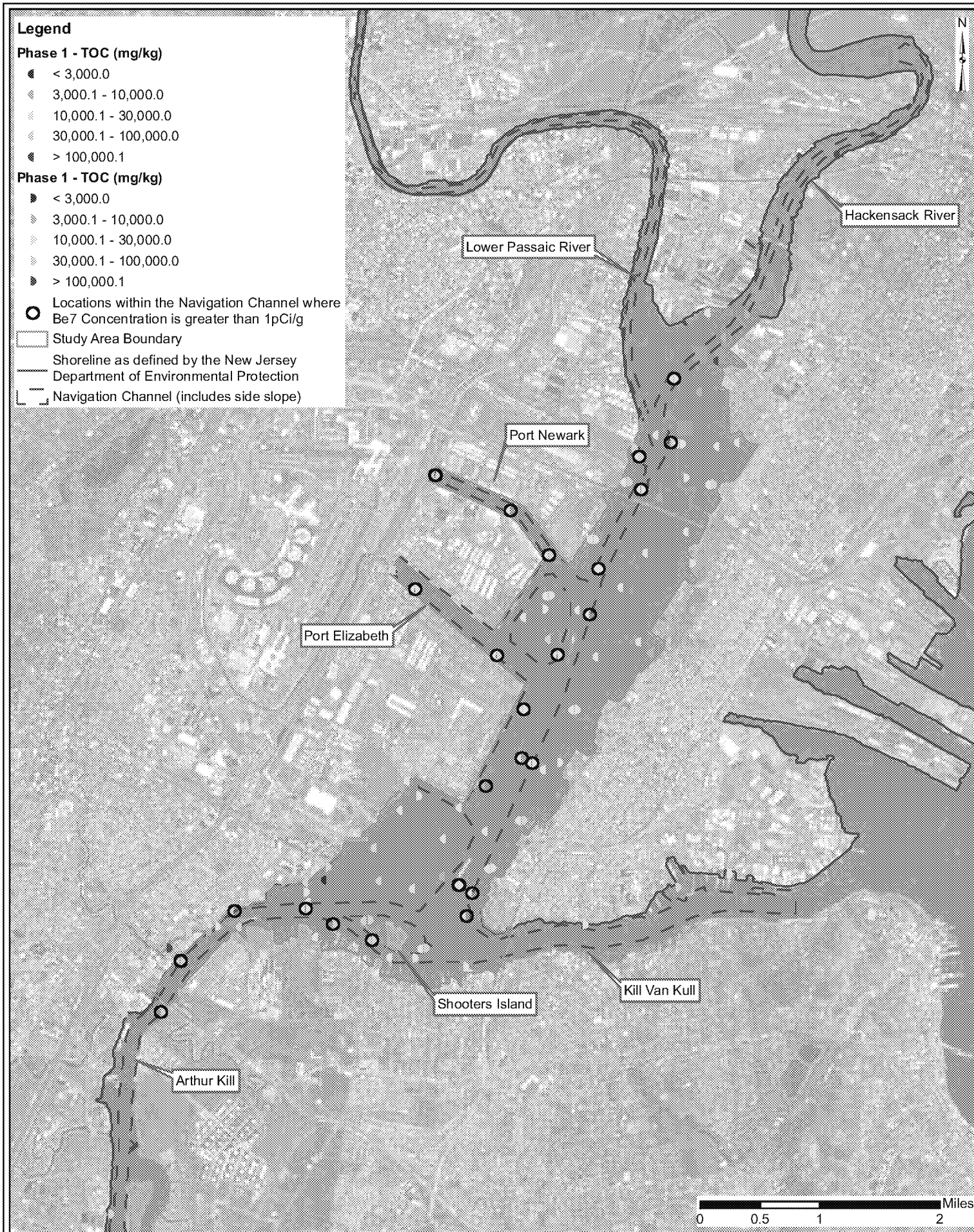
- ▶ < 3,000.0
- ▶ 3,000.1 - 10,000.0
- ▶ 10,000.1 - 30,000.0
- ▶ 30,000.1 - 100,000.0
- ▶ > 100,000.1

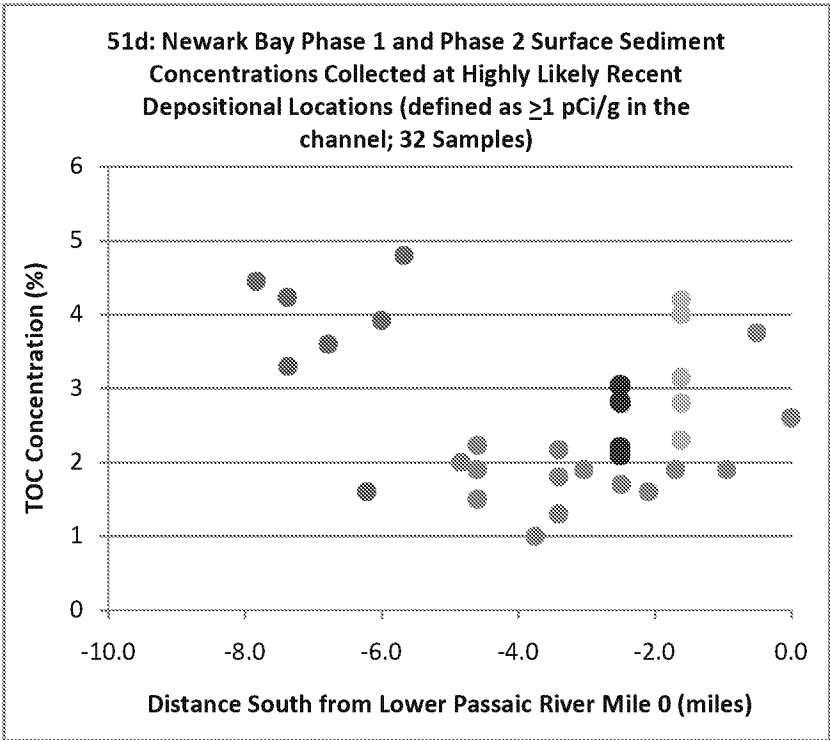
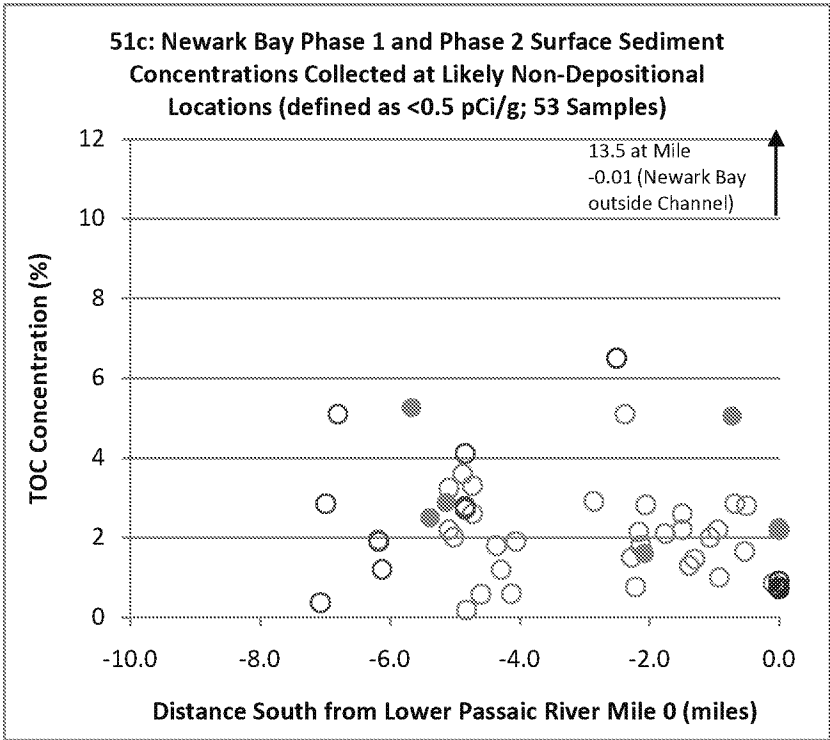
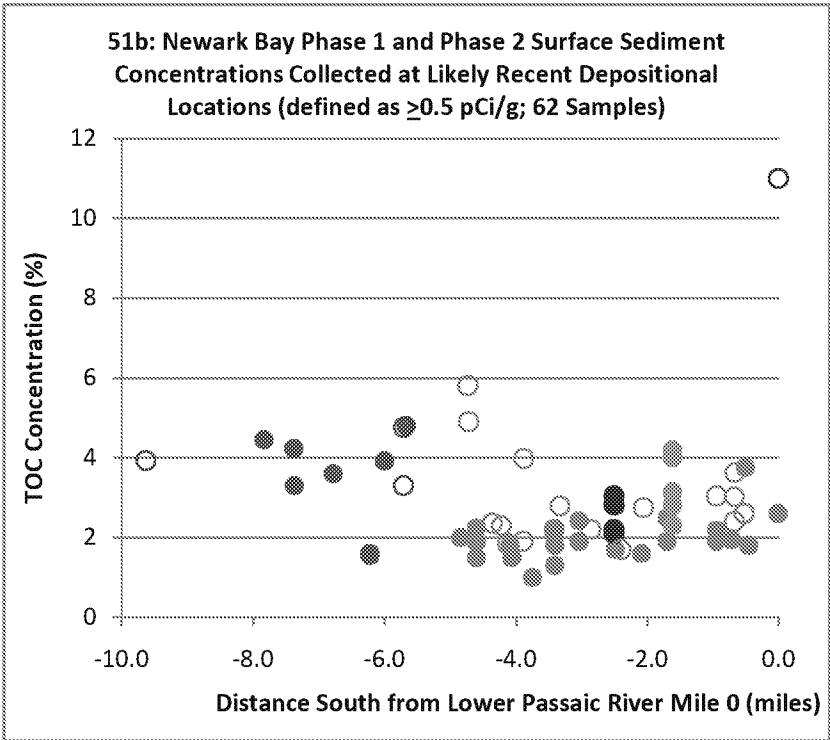
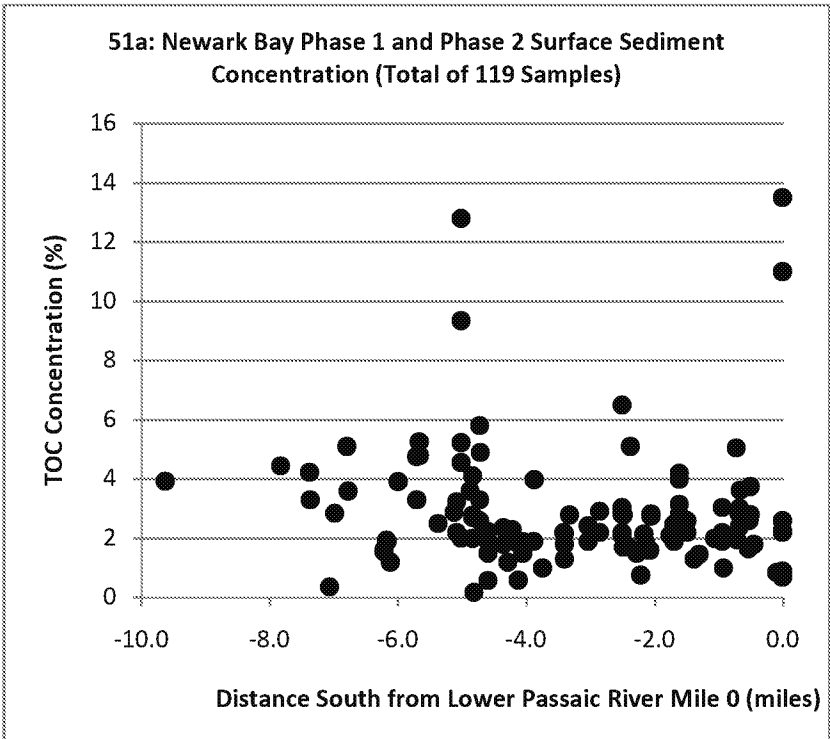
○ Locations within the Navigation Channel where Be7 Concentration is greater than 1pCi/g

□ Study Area Boundary

— Shoreline as defined by the New Jersey Department of Environmental Protection

- - - Navigation Channel (includes side slope)





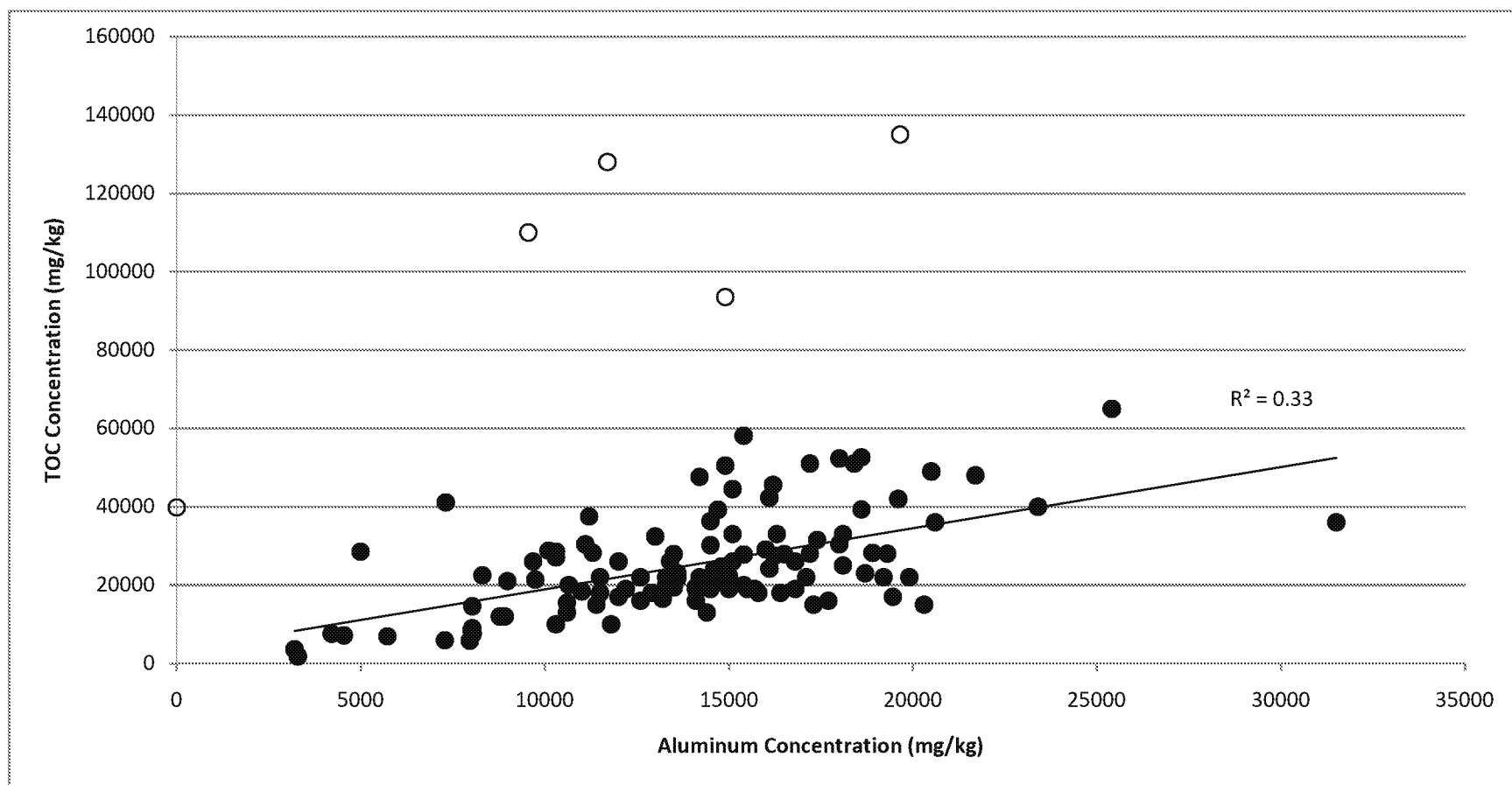
**Legend**

- All Phase 1 and 2 Sampling Locations
- Newark Bay Navigational Channel (includes side slopes)
- Newark Bay Outside of Channel
- Port Elizabeth Navigational Channel (includes side slopes)
- Port Elizabeth Outside of Channel
- Port Newark Navigational Channel (includes side slopes)
- Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
- Shooters Island and Arthur Kill Outside of Channel
- Hackensack River Navigational Channel (includes side slopes)
- Hackensack River Outside of Channel
- Kill Van Kull Outside of Channel

**Notes**

- TOC surface concentrations represent the top 6 inches of the core.
- When duplicate TOC values are provided by the laboratory, the average concentration is plotted.
- No nondetect TOC concentrations were reported.
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.





#### Legend

- Surface Sediment (0-6 inch) Included in Regression
- Surface Sediment (0-6 inch) Excluded from Regression

#### Notes

1. Sample NB02SED072-1 was not included in the trendline because Aluminum is not detected.
2. Samples HR01SED067-1, NB01SED064-1, ER02SED083-1, and ER02SED084-1 were not included in the trendline because the samples produce outliers.

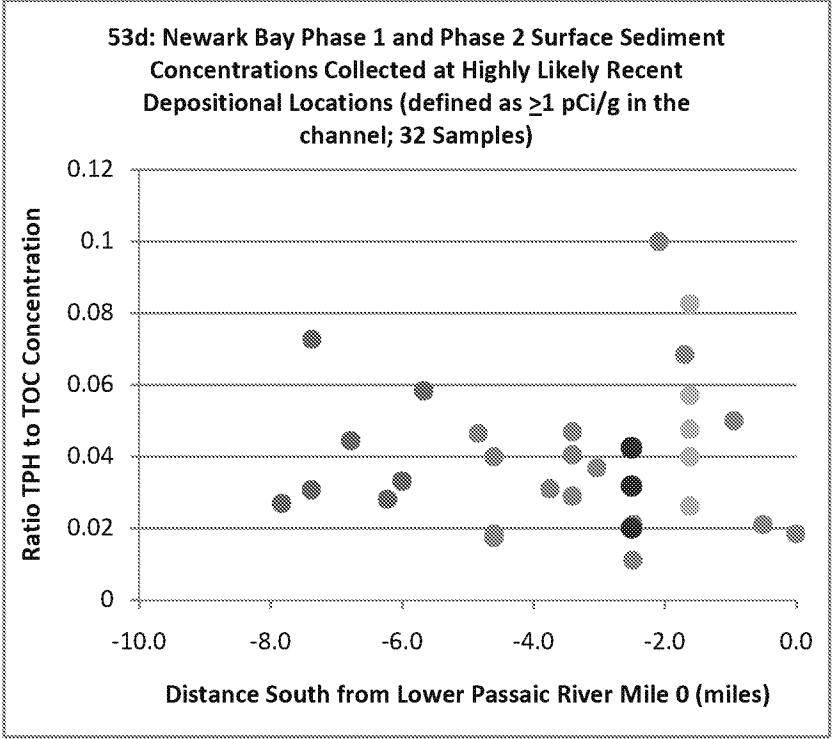
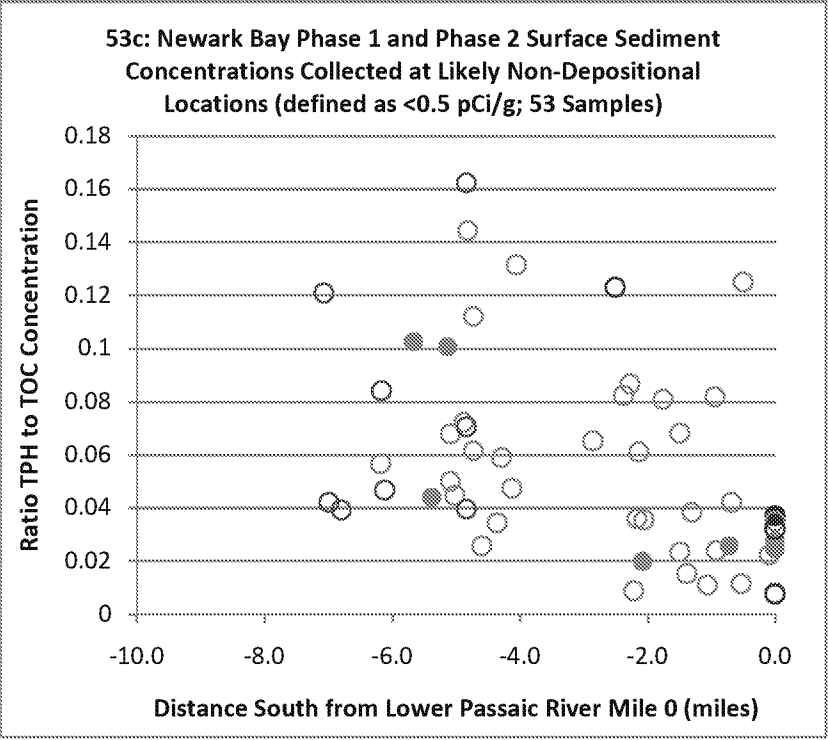
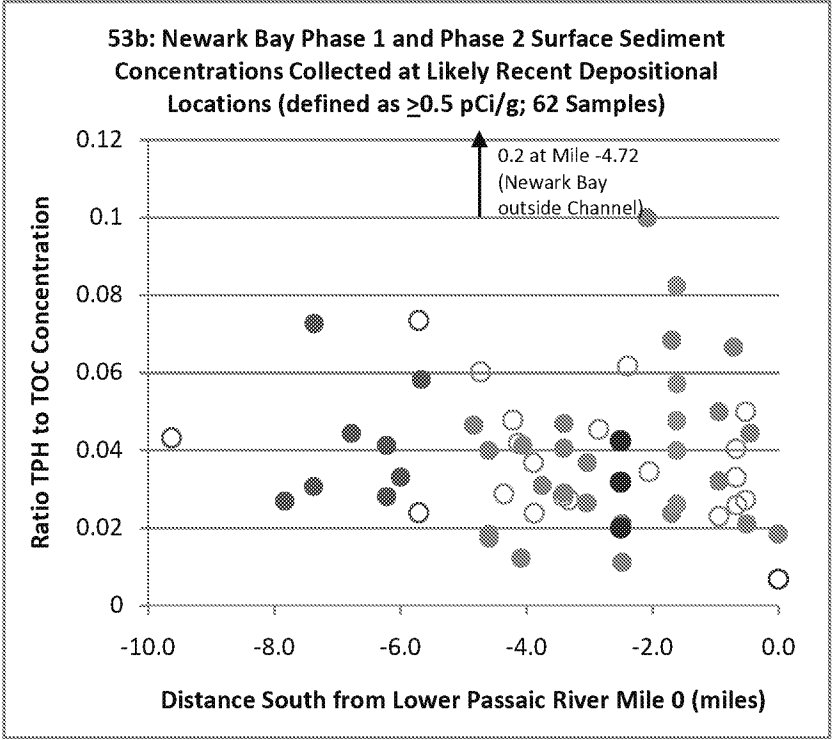
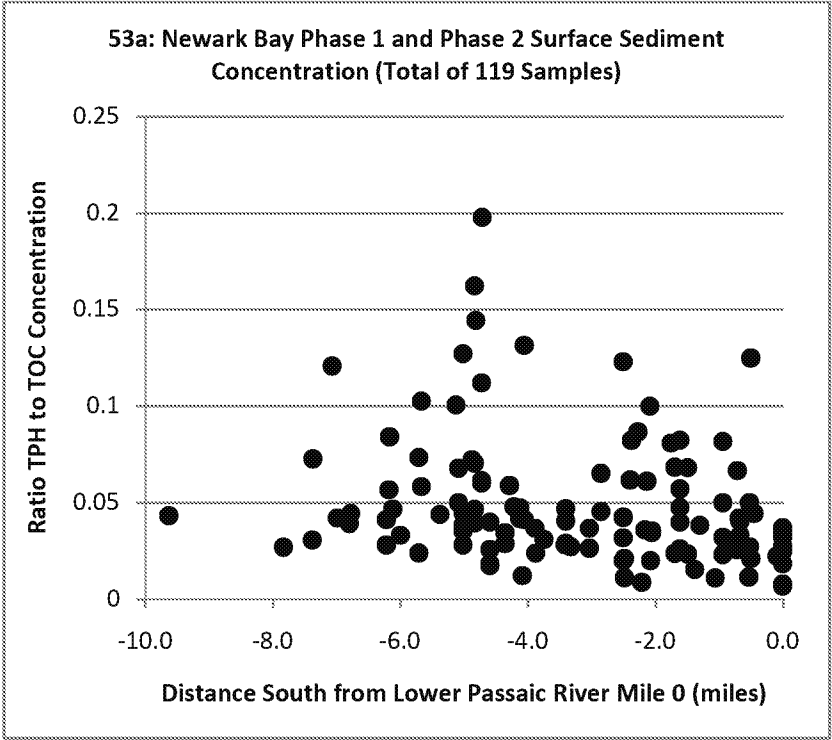


Correlation between TOC and Aluminum for Newark Bay  
Phase 1 and Phase 2 Surface Sediment  
*Newark Bay RI/FS Oversight*

August 2010

Figure 52



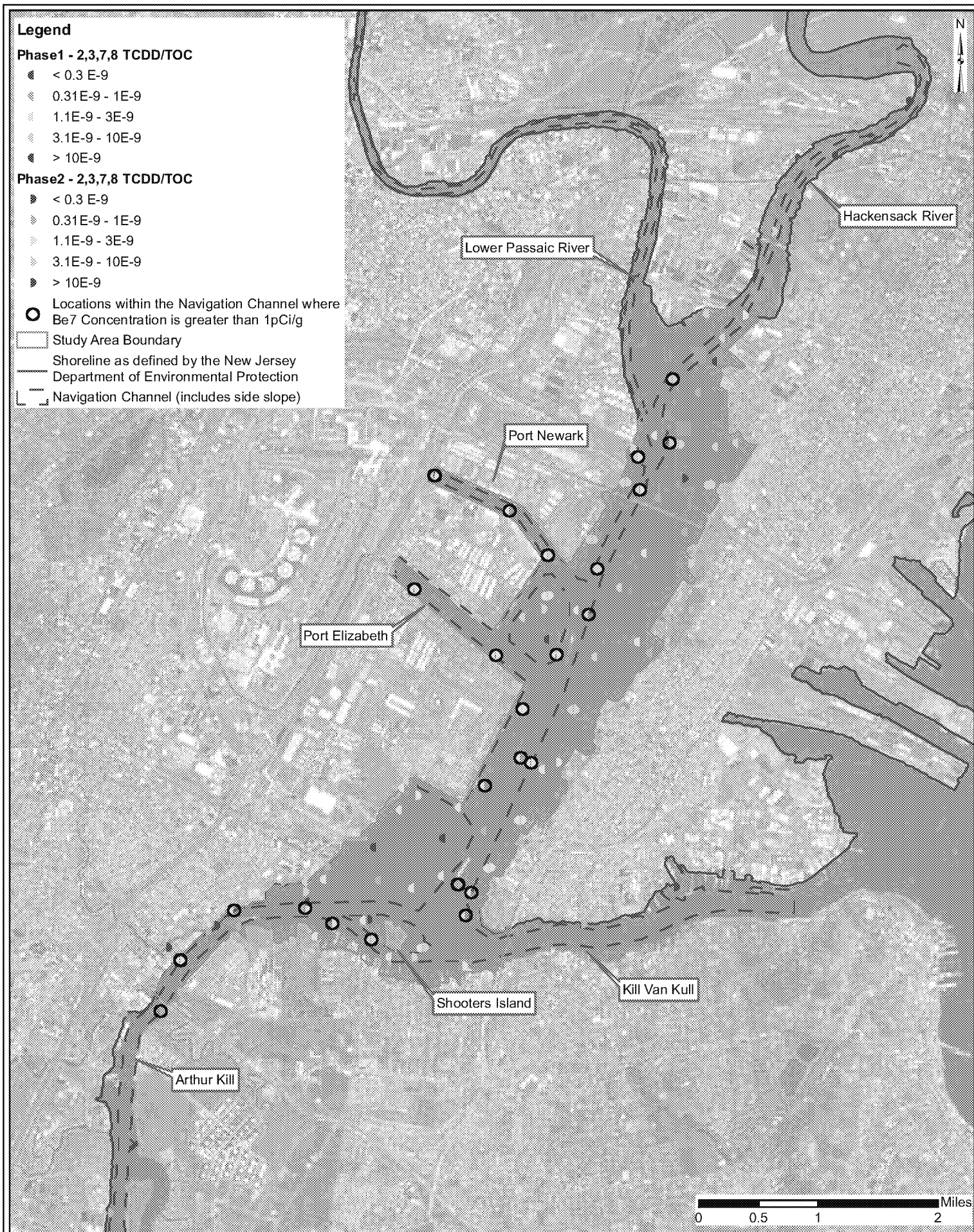


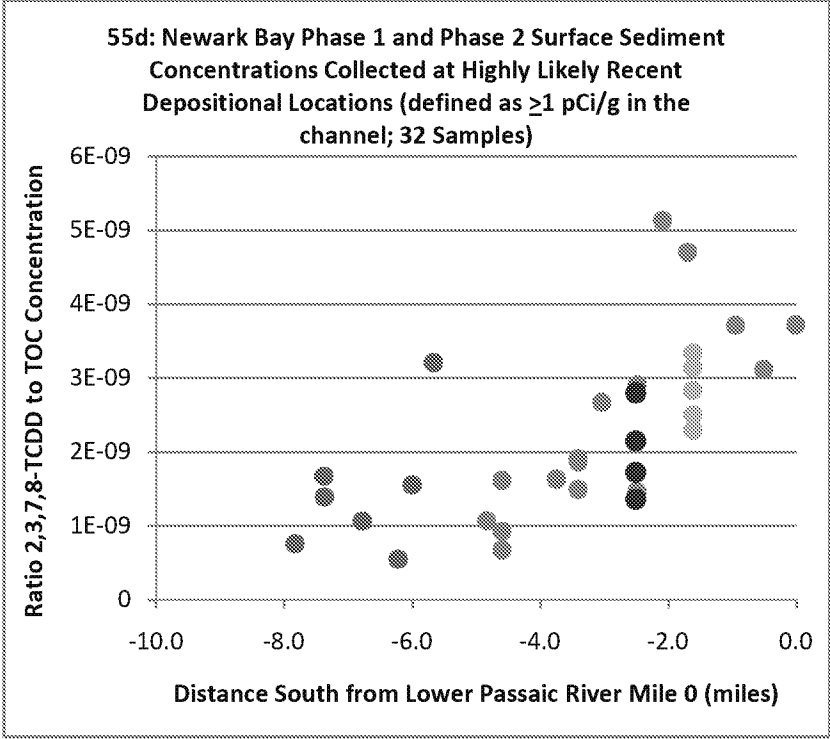
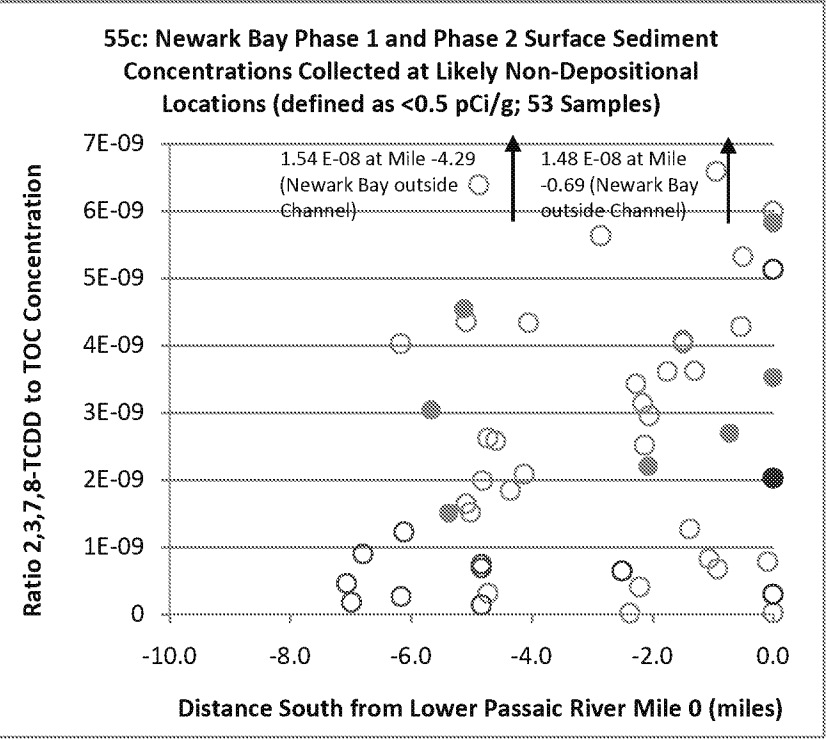
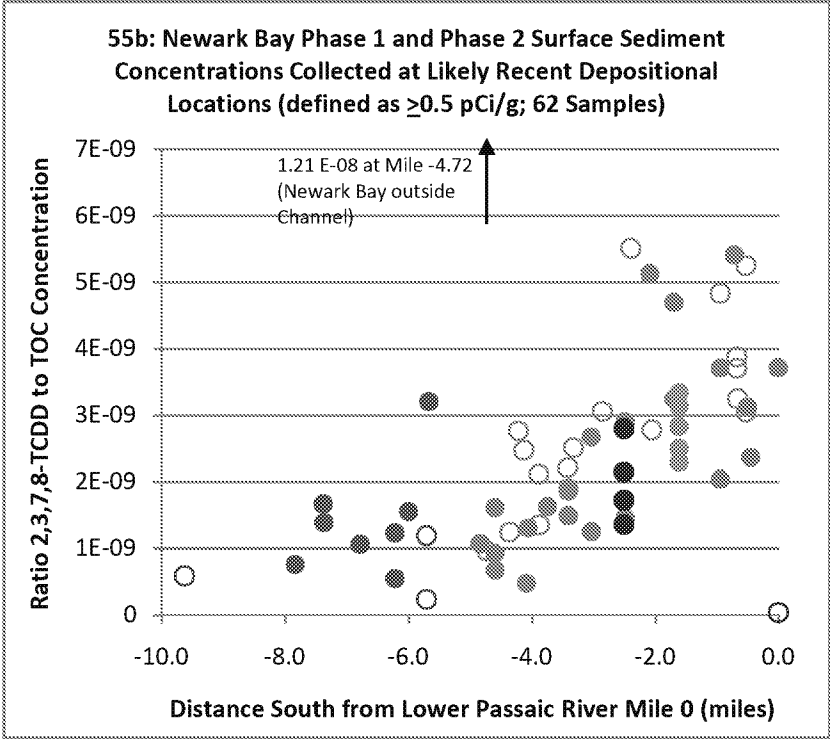
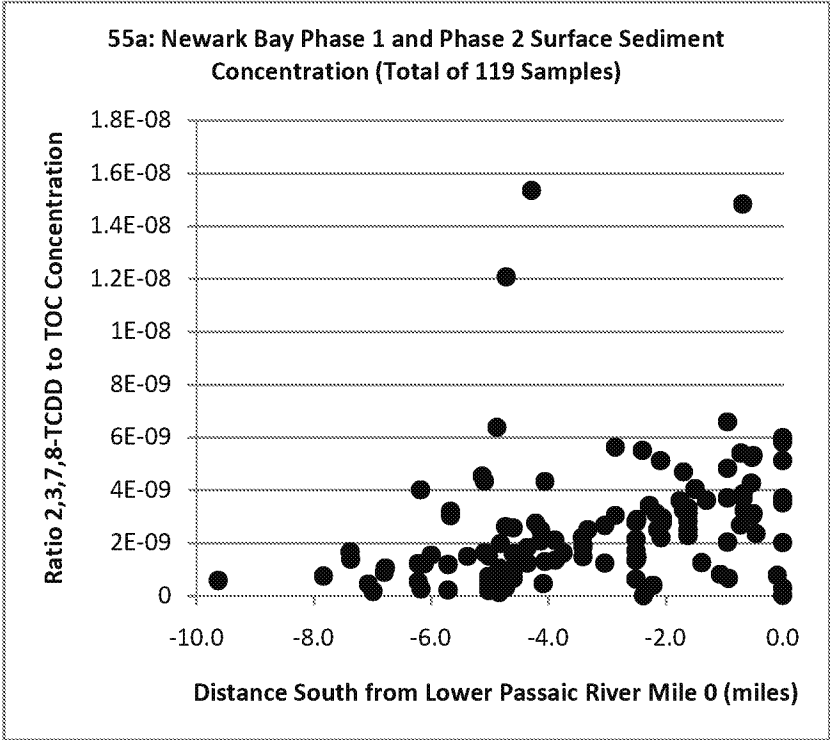
- Legend**
- All Phase 1 and 2 Sampling Locations
  - ▣ Newark Bay Navigational Channel (includes side slopes)
  - Newark Bay Outside of Channel
  - ▣ Port Elizabeth Navigational Channel (includes side slopes)
  - Port Elizabeth Outside of Channel
  - ▣ Port Newark Navigational Channel (includes side slopes)
  - ▣ Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Outside of Channel
  - ▣ Hackensack River Navigational Channel (includes side slopes)
  - Hackensack River Outside of Channel
  - Kill Van Kull Outside of Channel

**Notes**

1. TPH and TOC surface concentrations represent the top 6 inches of the core.
2. When duplicate TPH or TOC values are provided by the laboratory, the average concentration is used in the ratio.
3. No nondetect TPH or TOC concentrations were reported in surface sediment samples.
4. Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
5. Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.
6. Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.





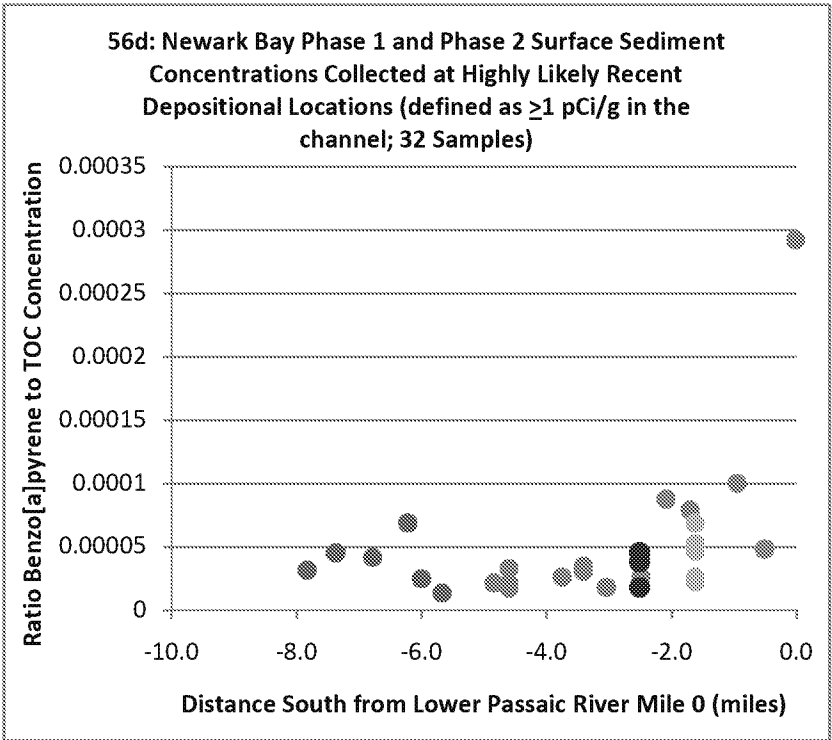
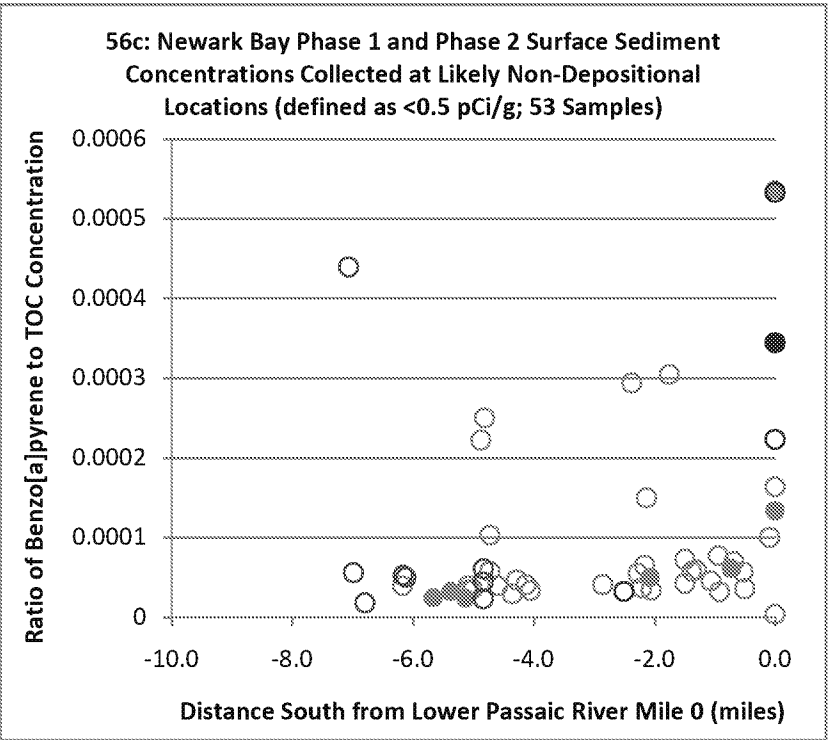
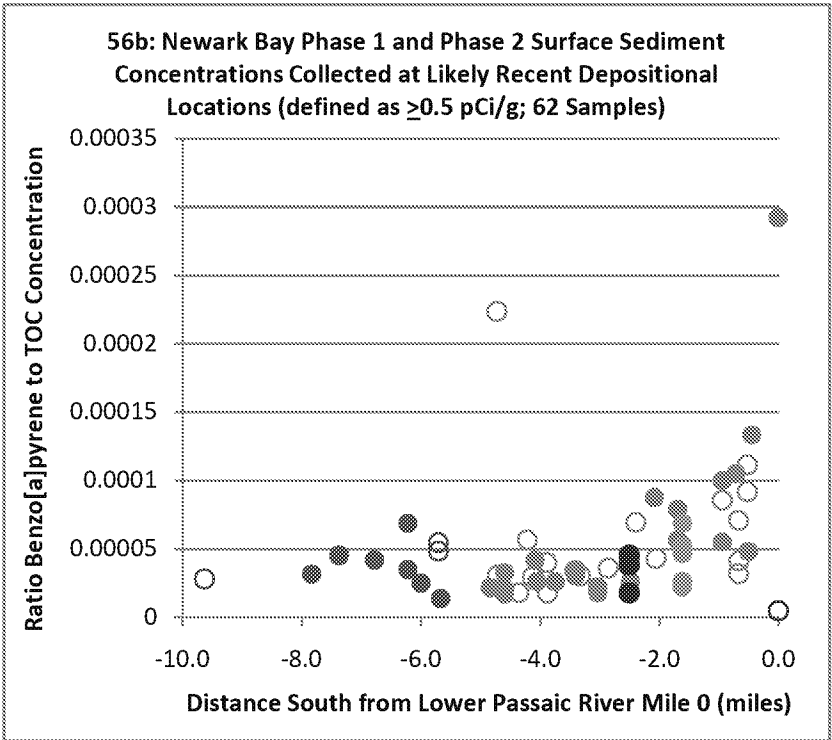
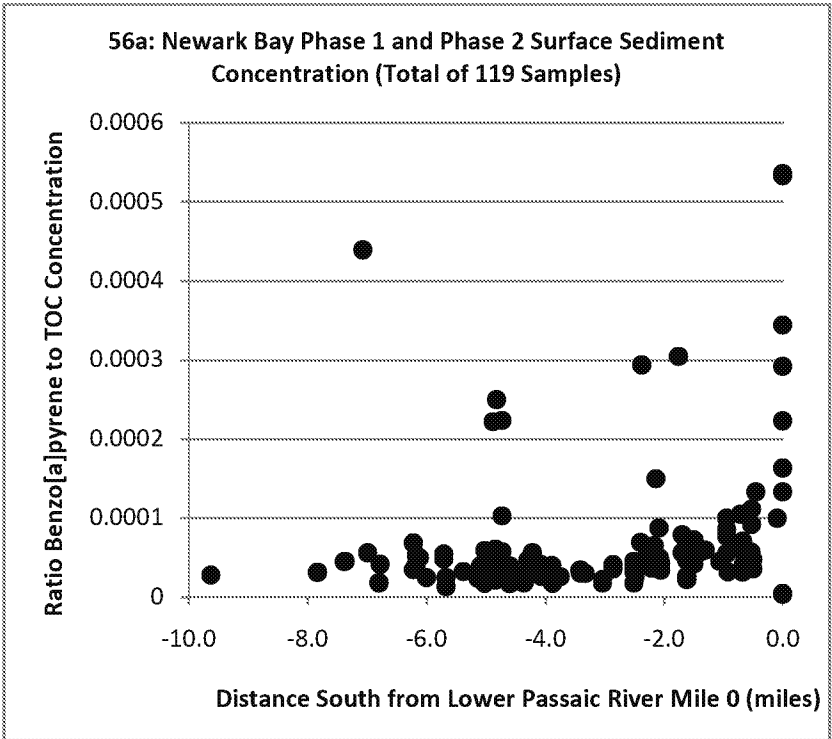


- Legend**
- All Phase 1 and 2 Sampling Locations
  - Newark Bay Navigational Channel (includes side slopes)
  - Newark Bay Outside of Channel
  - Port Elizabeth Navigational Channel (includes side slopes)
  - Port Elizabeth Outside of Channel
  - Port Newark Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Outside of Channel
  - Hackensack River Navigational Channel (includes side slopes)
  - Hackensack River Outside of Channel
  - Kill Van Kull Outside of Channel

**Notes**

- 2,3,7,8-TCDD and TOC and iron surface concentrations represent the top 6 inches of the core.
- When duplicate 2,3,7,8-TCDD and TOC values are provided by the laboratory, the average concentration is used in the ratio.
- No nondetect 2,3,7,8-TCDD and TOC concentrations were reported in surface sediment samples.
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile -1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.





- Legend**
- All Phase 1 and 2 Sampling Locations
  - Newark Bay Navigational Channel (includes side slopes)
  - Newark Bay Outside of Channel
  - Port Elizabeth Navigational Channel (includes side slopes)
  - Port Elizabeth Outside of Channel
  - Port Newark Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
  - Shooters Island and Arthur Kill Outside of Channel
  - Hackensack River Navigational Channel (includes side slopes)
  - Hackensack River Outside of Channel
  - Kill Van Kull Outside of Channel

Notes

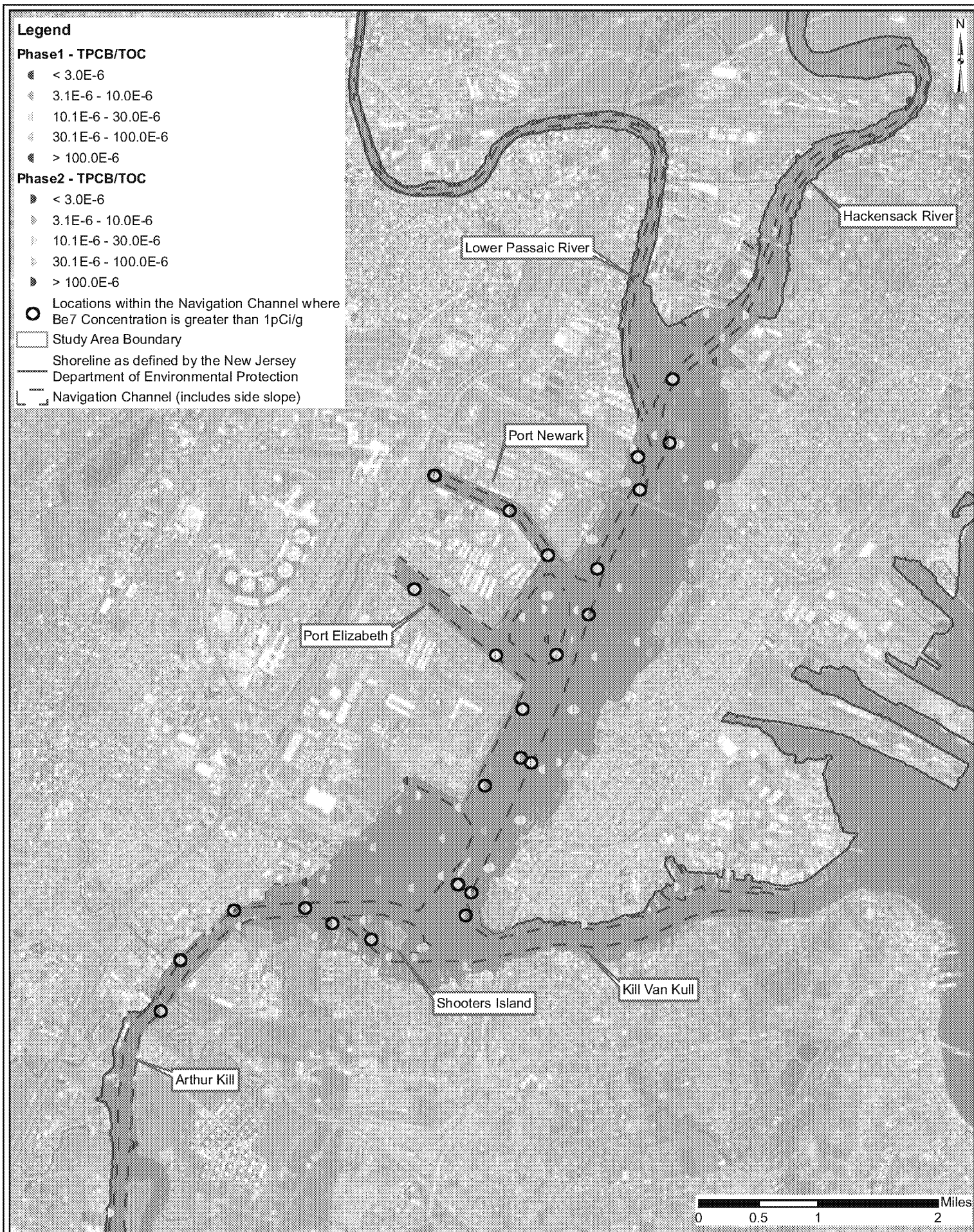
- Benzo[a]pyrene and TOC surface concentrations represent the top 6 inches of the core.
- When duplicate benzo[a]pyrene or TOC values are provided by the laboratory, the average concentration is used in the ratio.
- No nondetect TOC concentrations were reported. One rejected and one nondetect benzo[a]pyrene concentration were reported for surface sediments. Nondetect concentrations are presented as half the detection limit.
- Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
- Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile - 1.62, and Port Elizabeth plots at Mile -2.51.
- Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.



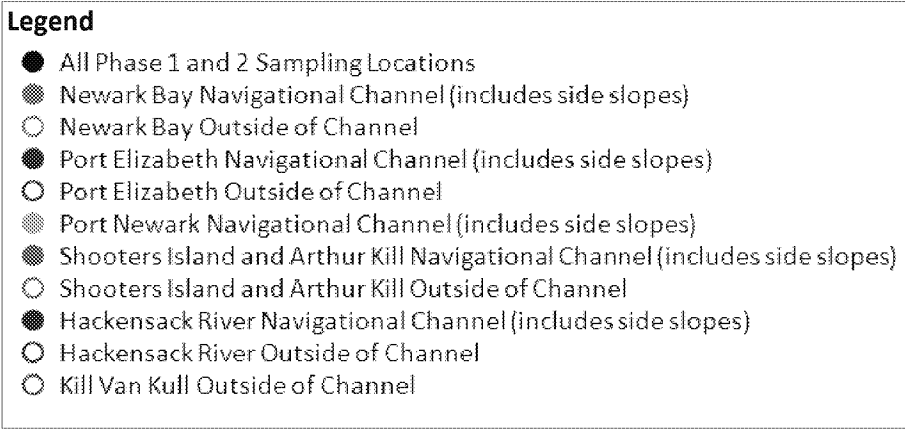
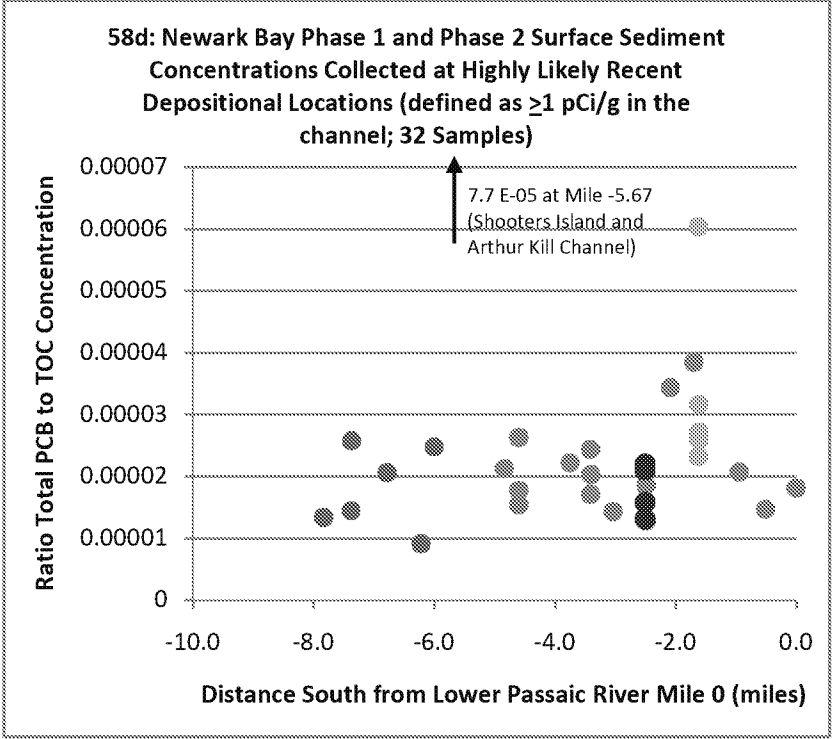
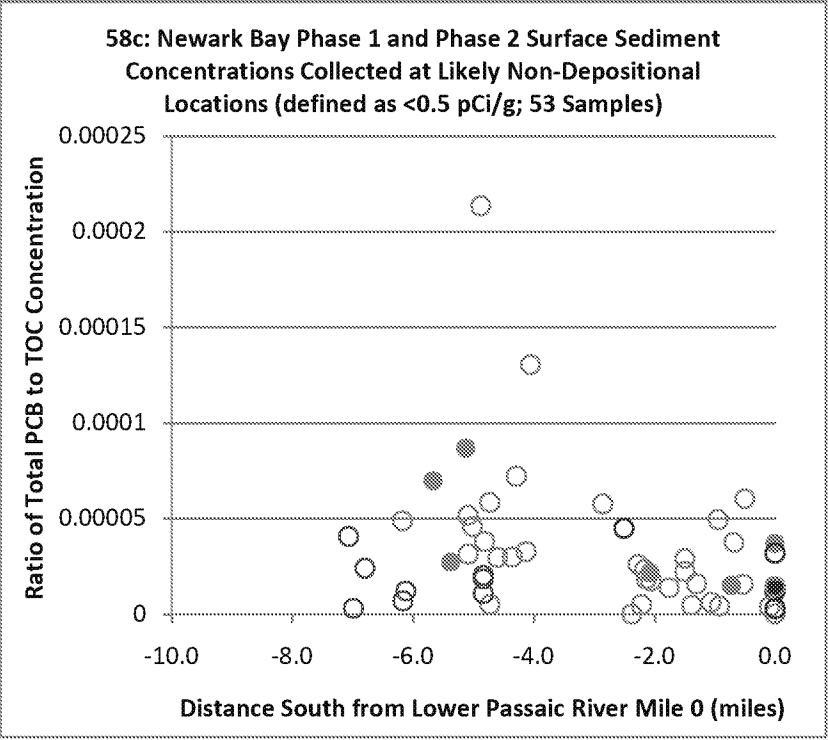
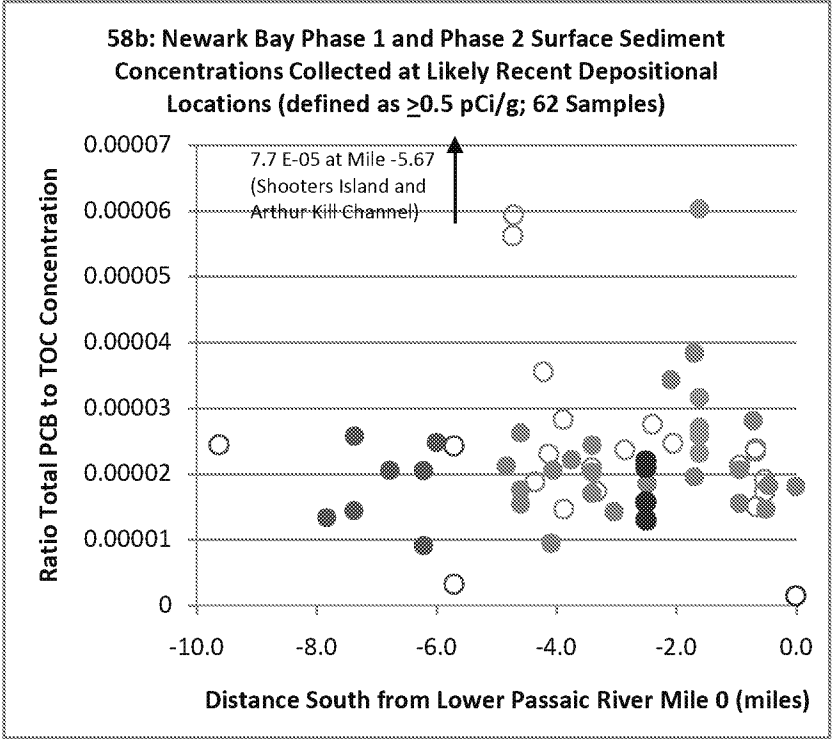
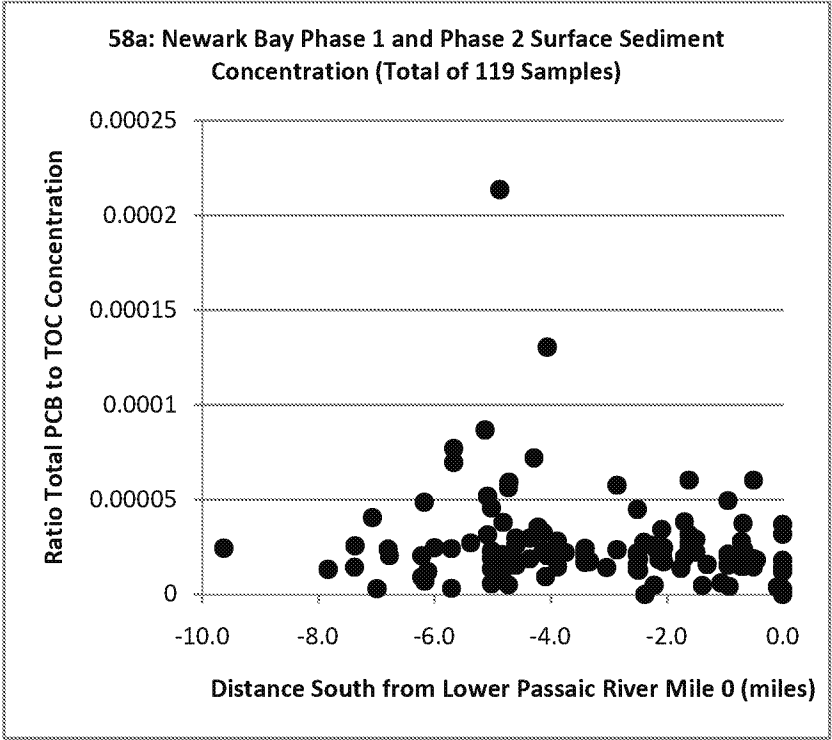
Ratio of Benzo[a]pyrene to TOC Surface Sediment Concentrations  
Newark Bay RI/FS Oversight

October 2010  
Figure 56



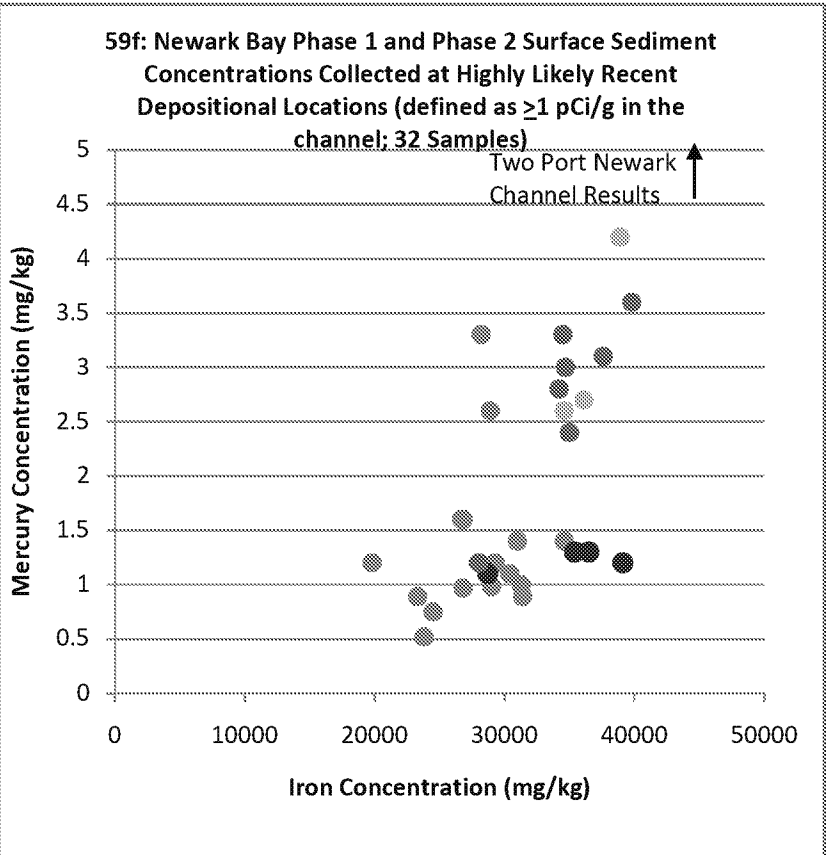
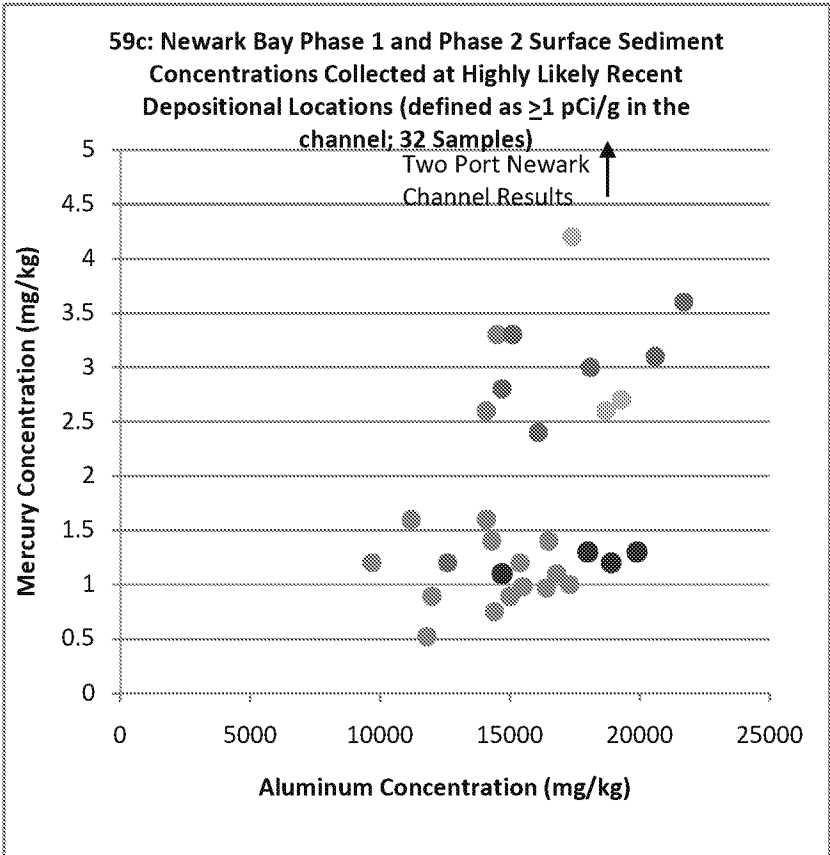
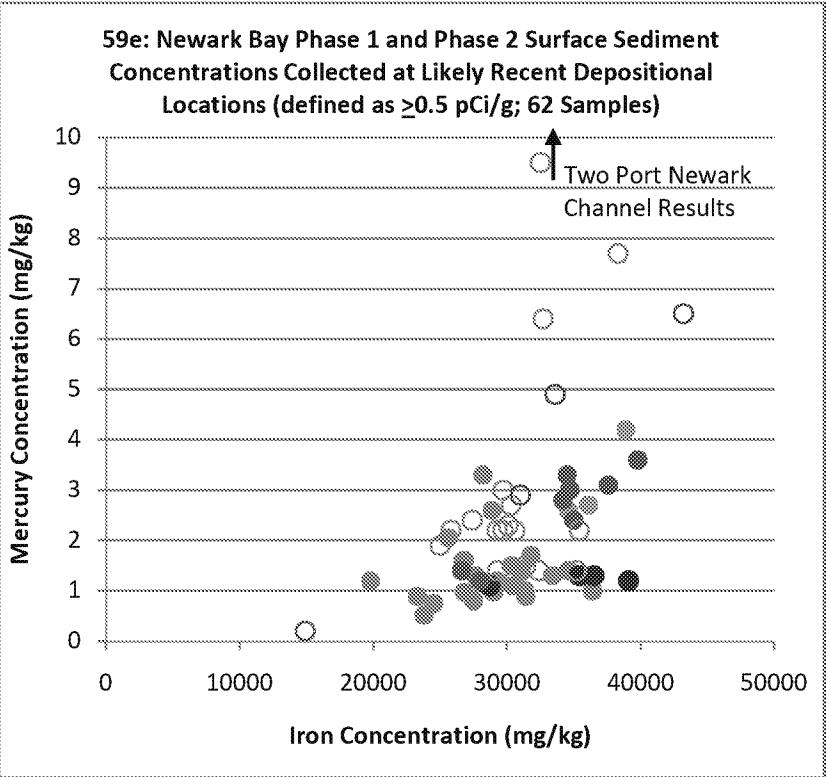
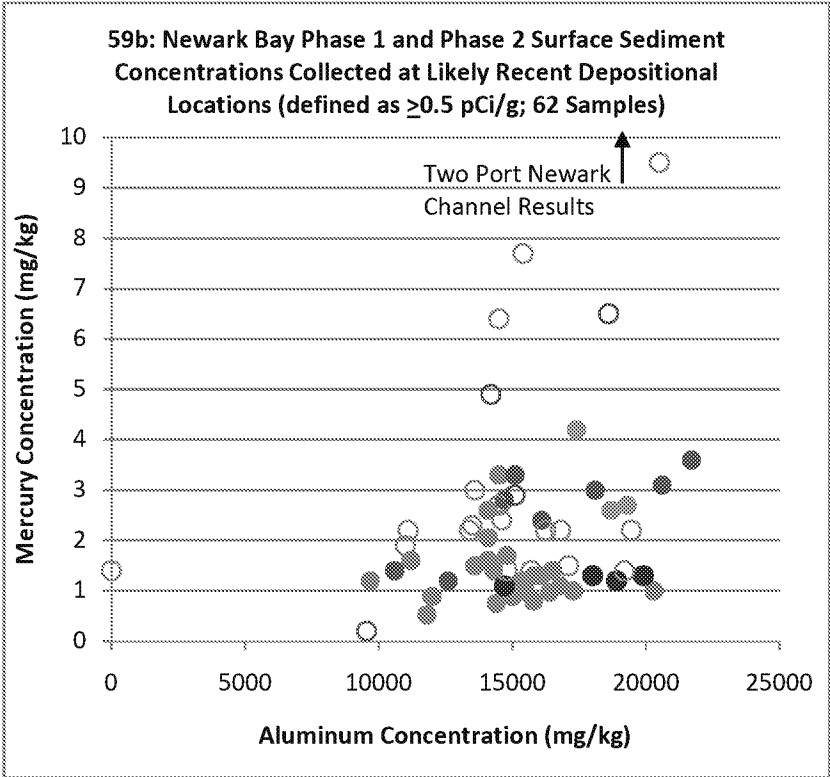
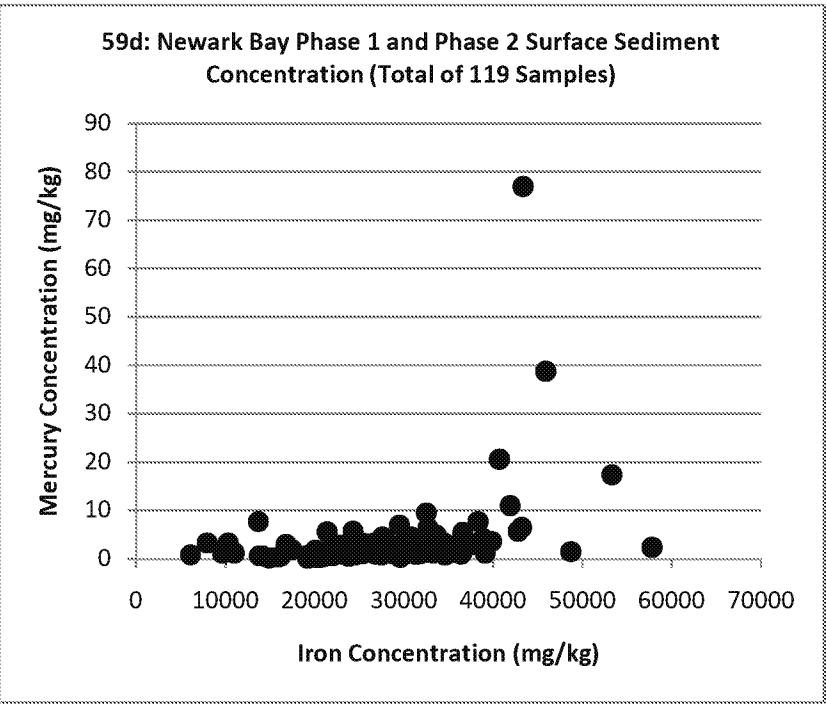
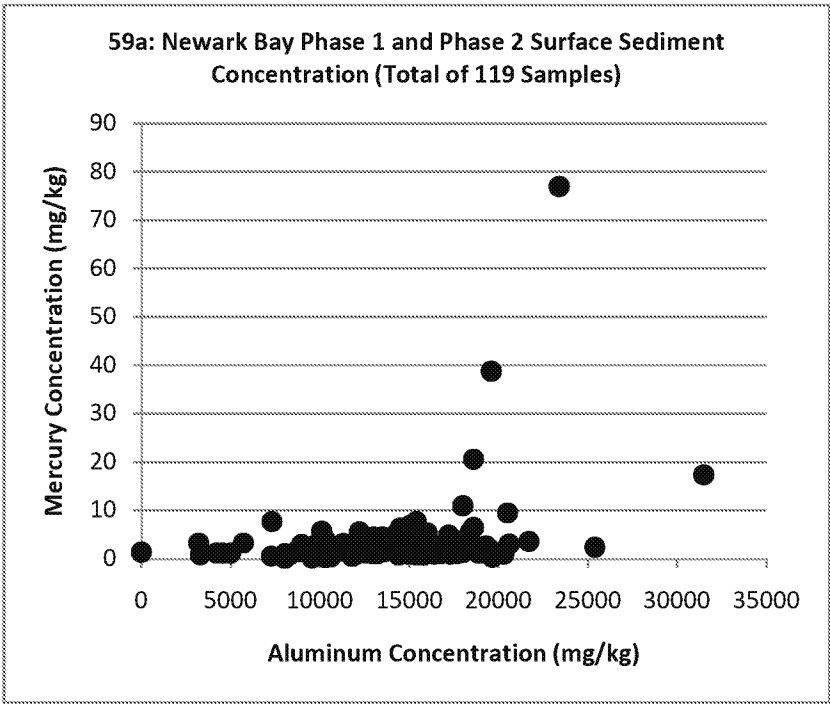






**Notes**

1. Total PCB and TOC surface concentrations represent the top 6 inches of the core.
2. When duplicate Total PCB or TOC values are provided by the laboratory, the average concentration is used in the ratio.
3. No nondetect Total PCB or TOC concentrations were reported in surface sediment samples.
4. Beryllium-7 (Be7) analysis was conducted on top 1 inch of sediment. Plot A represents all 119 sample locations from Phase 1 and Phase 2. Plot B represents sampling locations where Be7 concentrations were greater than or equal to 0.5 pCi/g (excludes coring locations that targeted source trackdown). Plot C represents sampling locations where Be7 concentrations were less than 0.5 pCi/g. Plot D represents sampling locations where Be7 concentrations were greater than or equal to 1 pCi/g in the navigational channel.
5. Mile 0 on the plot is equal to River Mile 0 on the Lower Passaic River (at the northern end of the bay). Mile -4.8 represents the confluence of the bay and Kill Van Kull. Mile -4.8 to Mile -9.6 extend south through Arthur Kill (north of Shooters Island). Port Newark plots at Mile -1.62, and Port Elizabeth plots at Mile -2.51.
6. Data Source: Tierra Solutions, Inc. Newark Bay Phase 1 and Phase 2 Data Evaluation and Analysis Report (April 2010). Phase 1 samples were collected from October-December 2005; Phase 2 samples were collected from October-December 2007.



Legend

- All Phase 1 and Phase 2 Sampling Locations
- Newark Bay Navigational Channel (includes side slopes)
- Newark Bay Outside of Channel
- Port Elizabeth Navigational Channel (includes side slopes)
- Port Newark Navigational Channel (includes side slopes)
- Shooters Island and Arthur Kill Navigational Channel (includes side slopes)
- Shooters Island and Arthur Kill Outside of Channel
- Hackensack River Outside of Channel

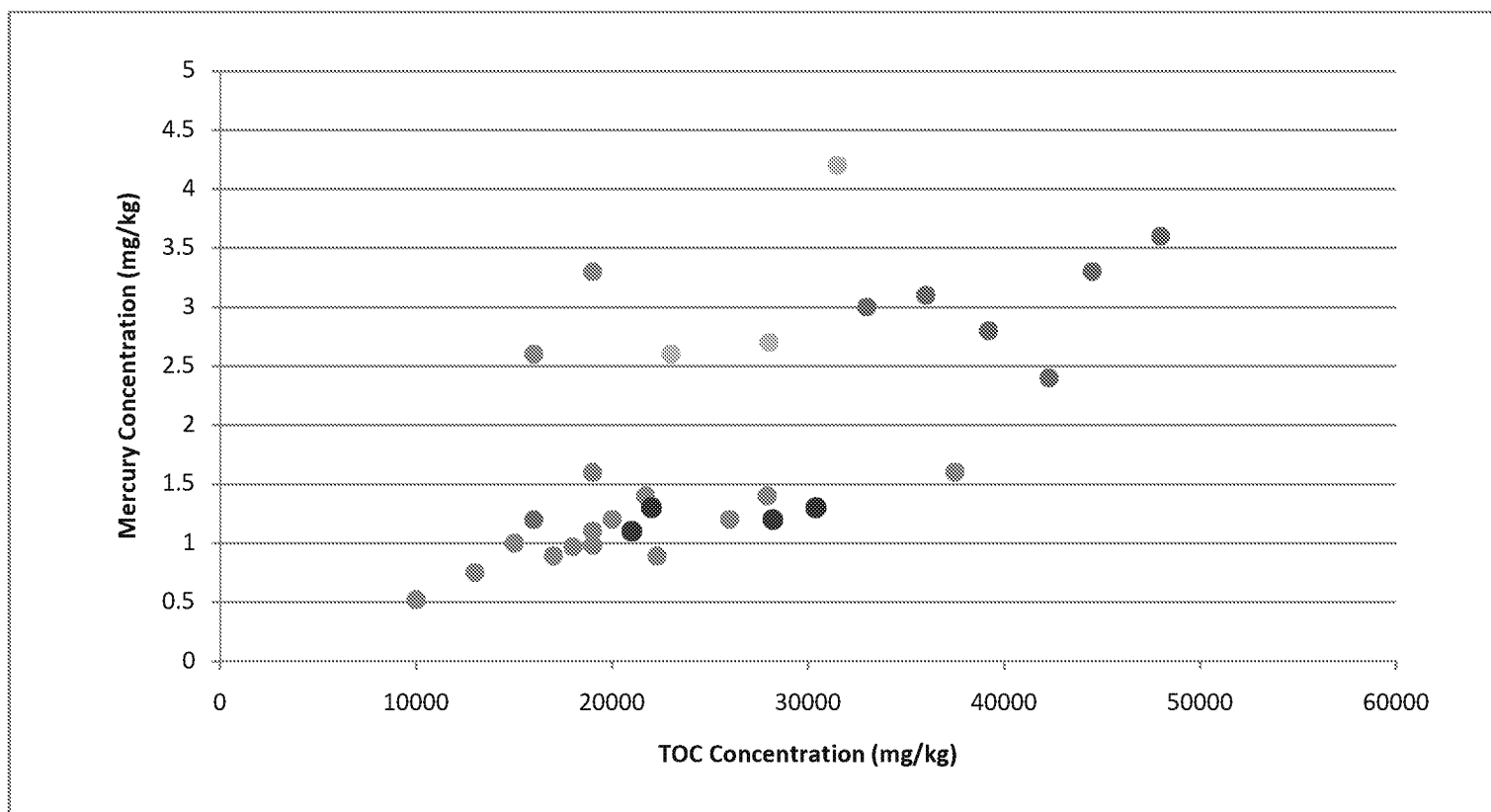
Note

1. Sample NB02SED072-1 was not included because Aluminum is not detected.



Mercury vs Aluminum and Mercury vs Iron Correlation Plots  
Newark Bay RI/FS Oversight

August 2010  
Figure 59



#### Legend

- Newark Bay Navigational Channel (includes side slopes)
- Port Elizabeth Navigational Channel (includes side slopes)
- Port Newark Navigational Channel (includes side slopes)
- Shooters Island and Arthur Kill Navigational Channel (includes side slopes)

Note: Newark Bay Phase 1 and Phase 2 Surface Sediment Samples Collected at Highly Likely Recent Depositional Locations (defined as >1 pCi/g in the channel; 32 Samples)



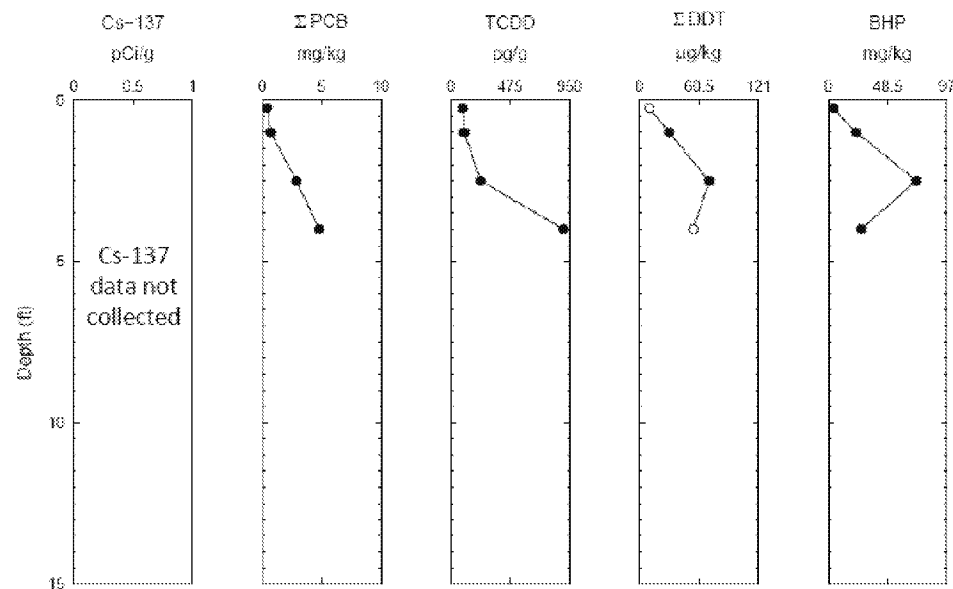
Correlation between Mercury and TOC for Newark Bay  
Phase 1 and Phase 2 Surface Sediment  
*Newark Bay RI/FS Oversight*

August 2010

Figure 60

## Core 063

## Core 101



**Profile  
not  
available  
in the TSI  
report.**

### Notes:

Phase 1  
RM: 0.01  
Channel  
Be7 > 1 pCi/g  
Red Clay Encountered at 4.3 feet.  
In Potential USACE High Net Deposition Area

### Notes:

Phase 2  
RM: 0.01  
Channel  
Non Be7 Bearing  
In Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



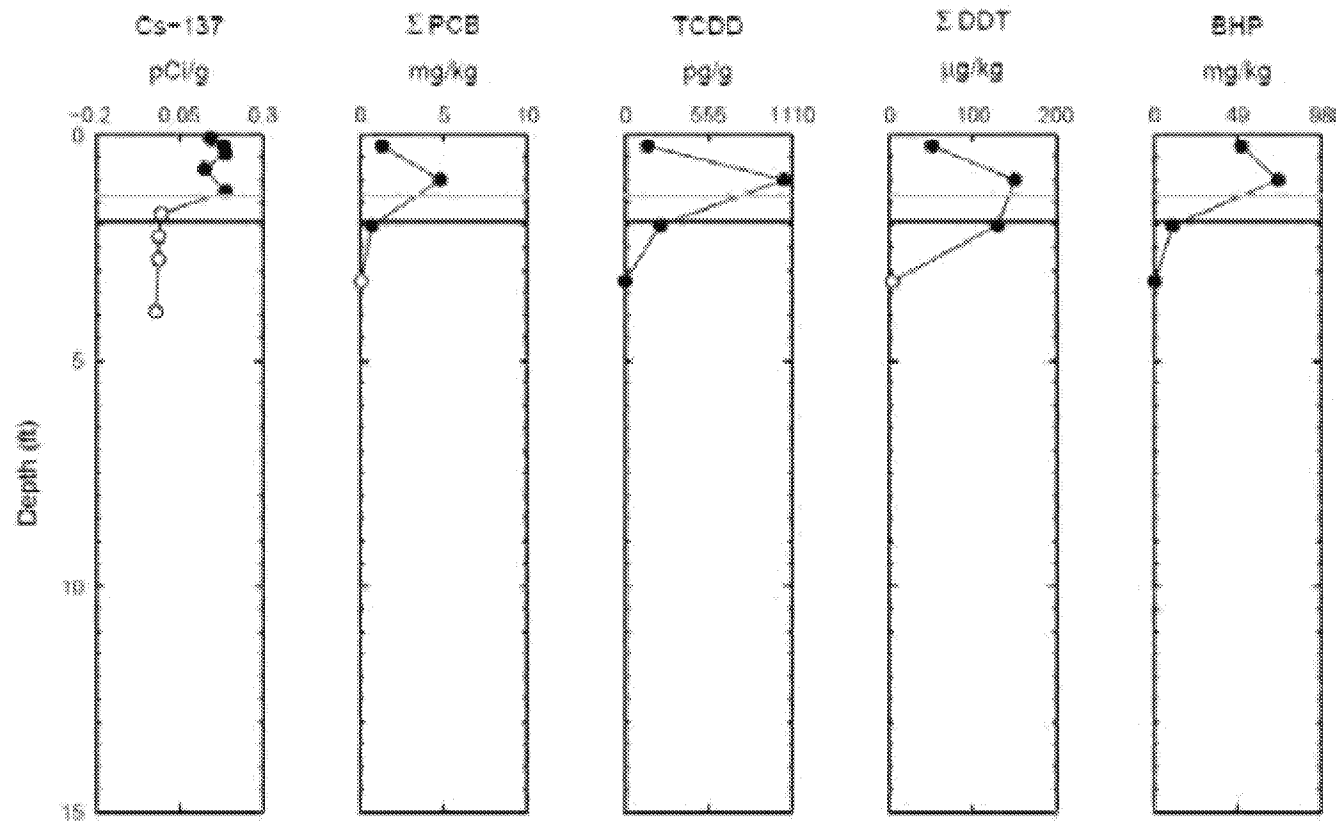
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Newark Bay Chemical and Radiological Downcore Profiles for  
Core 063 and Core 101  
*Newark Bay RI/FS Oversight*

Figure 61

October 2010



Lines above estimate 1940 depth based on the following methods:

- Cs-137 1954 Horizon Method
- Cs-137 1963 to 1954 Slope Method
- Cs-137 1963 Peak Method
- Pb-210 Regression Method

**Notes:**

Phase 1  
 RM: 0.51  
 Non-Channel  
 Non-Be7 Bearing  
 Not in Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



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## Newark Bay Chemical and Radiological Downcore Profiles for Core 058

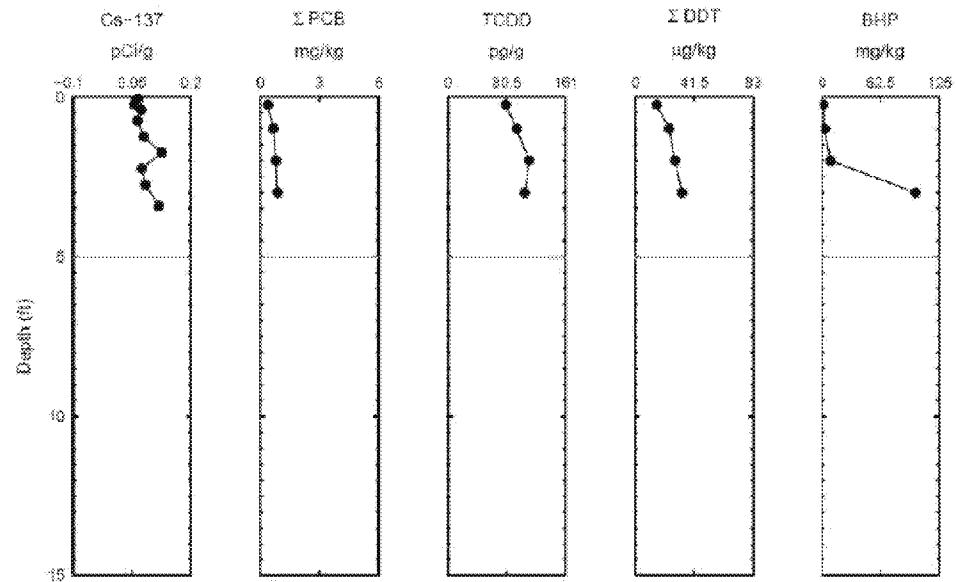
Newark Bay RI/FS Oversight

Figure 62

October 2010



## Core 060



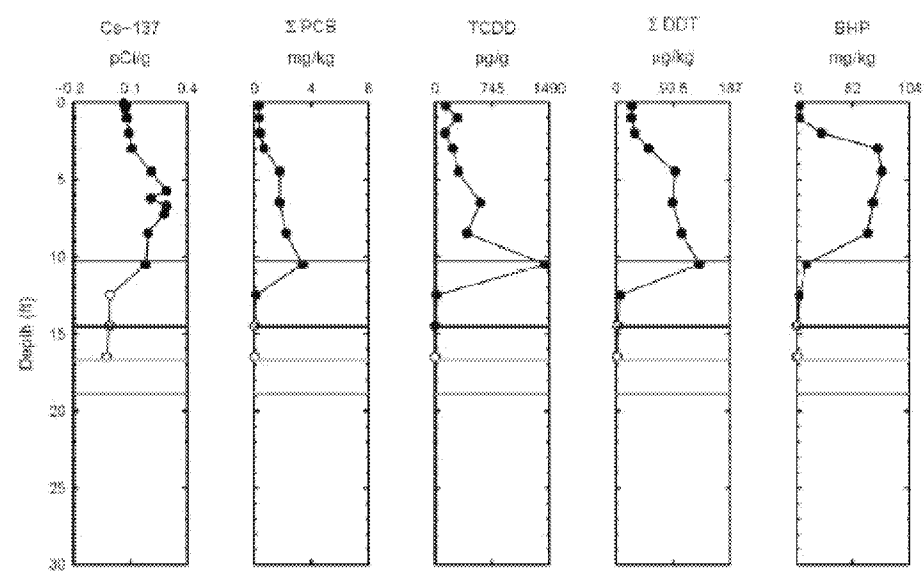
Lines above estimate 1940 depth based on the following methods:

— Cs-137 1954 Horizon Method      — Cs-137 1963 to 1954 Slope Method  
 — Cs-137 1963 Peak Method      — Pb-210 Regression Method

### Notes:

Phase 1  
 RM: 0.53  
 Non-Channel  
 Be7 > 0.5 pCi/g  
 Near the edge of Potential USACE High Net Deposition Area

## Core 080



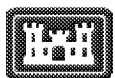
Lines above estimate 1940 depth based on the following methods:

— Cs-137 1954 Horizon Method      — Cs-137 1963 to 1954 Slope Method  
 — Cs-137 1963 Peak Method      — Pb-210 Regression Method

### Notes:

Phase 2  
 RM: 0.53  
 Non-Channel  
 Be7 > 0.5 pCi/g  
 Near the edge of Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



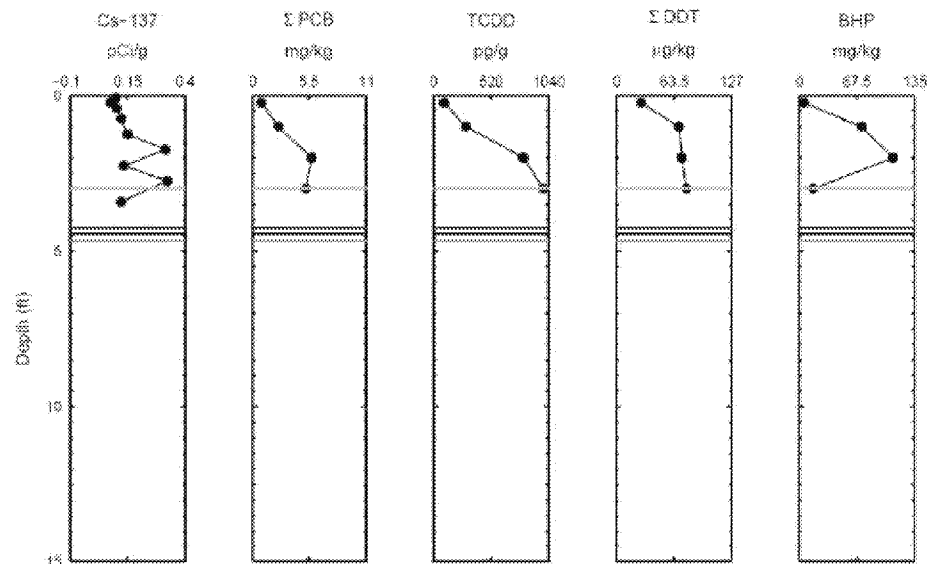
Newark Bay Chemical and Radiological Downcore Profiles for  
Core 060 and Core 080

Newark Bay RI/FS Oversight

Figure 63

October 2010

## Core 057



Lines above estimate 1940 depth based on the following methods:

- Cs-137 1954 Horizon Method
- Cs-137 1963 to 1954 Slope Method
- Cs-137 1963 Peak Method
- Pb-210 Regression Method

### Notes:

Phase 1

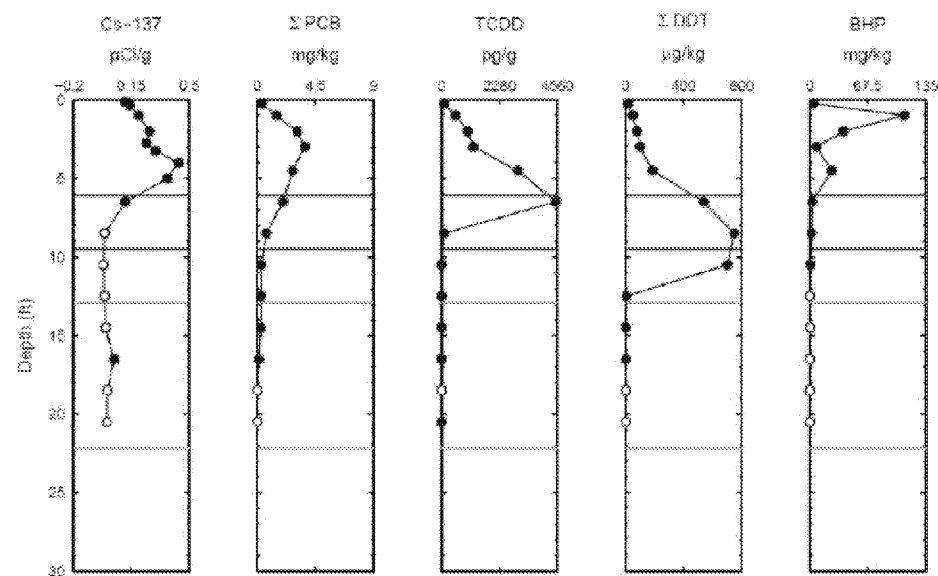
RM: 0.68

Non-Channel

Be7 > 0.5 pCi/g

Not in Potential USACE High Net Deposition Area

## Core 079



Lines above estimate 1940 depth based on the following methods:

- Cs-137 1954 Horizon Method
- Cs-137 1963 to 1954 Slope Method
- Cs-137 1963 Peak Method
- Pb-210 Regression Method

### Notes:

Phase 2

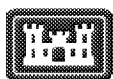
RM: 0.68

Non-Channel

Be7 > 0.5pCi/g

Not in Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 200.



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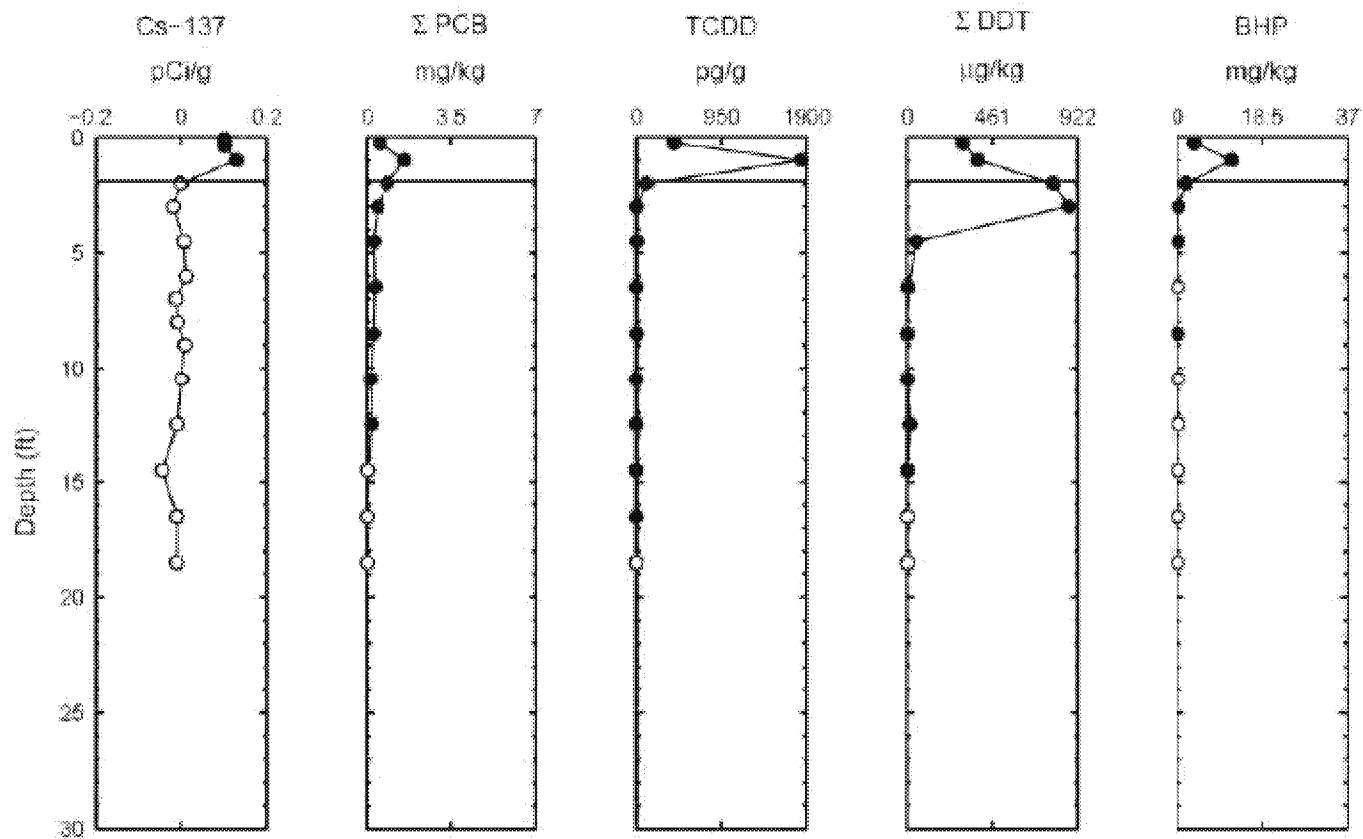


Newark Bay Chemical and Radiological Downcore Profiles for  
Core 057 and Core 079

Newark Bay RI/FS Oversight

Figure 64

October 2010



Lines above estimate 1940 depth based on the following methods:

**Notes:**

Phase 2

RM: 0.69

Non-Channel

Non-Be7 Bearing

In Potential USACE High Net Deposition Area

- Cs-137 1954 Horizon Method
- Cs-137 1963 to 1954 Slope Method
- Cs-137 1963 Peak Method
- Pb-210 Regression Method

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



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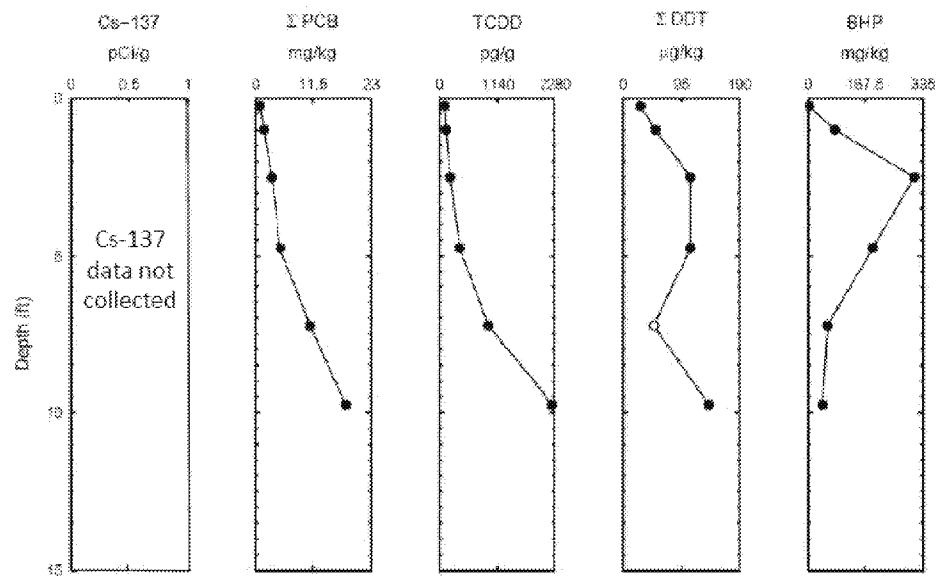
## Newark Bay Chemical and Radiological Downcore Profiles for Core 093

Newark Bay RI/FS Oversight

Figure 65

October 2010

## Core 052



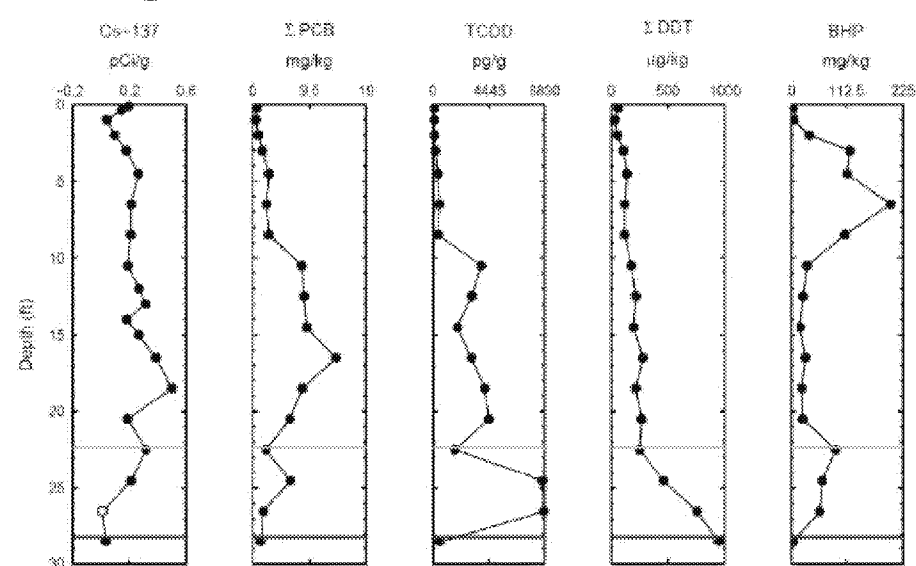
Lines above estimate 1940 depth based on the following methods:

- Cs-137 1954 Horizon Method
- Cs-137 1963 to 1954 Slope Method
- Cs-137 1963 Peak Method
- Pb-210 Regression Method

### Notes:

Phase 1  
RM: 0.73  
Channel  
Be7 > 0.5 pCi/g  
In Potential USACE High Net Deposition Area

## Core 078



Lines above estimate 1940 depth based on the following methods:

- Cs-137 1954 Horizon Method
- Cs-137 1963 to 1954 Slope Method
- Cs-137 1963 Peak Method
- Pb-210 Regression Method

### Notes:

Phase 2  
RM: 0.73  
Channel  
Non- Be7 Bearing  
In Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



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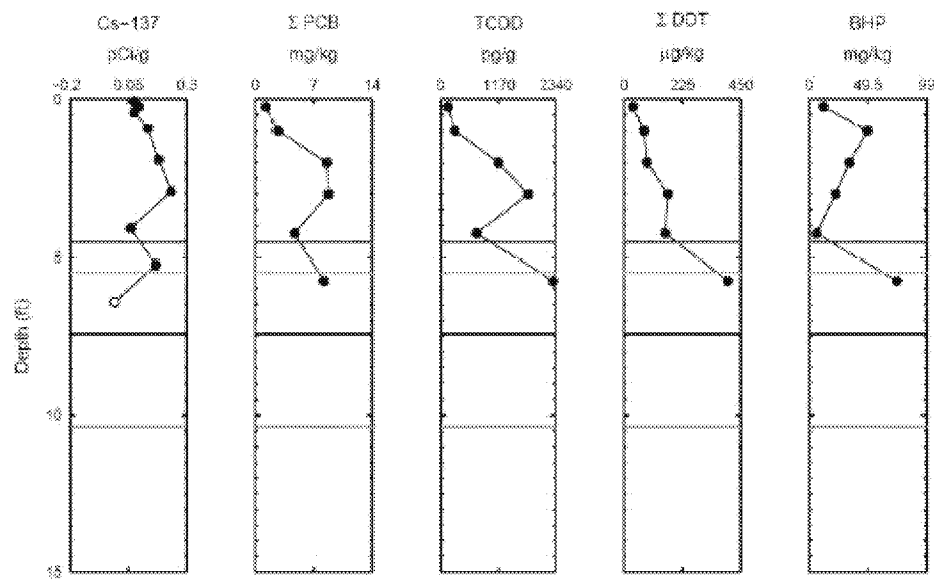
Newark Bay Chemical and Radiological Downcore Profiles for  
Core 052 and Core 078

Newark Bay RI/FS Oversight

Figure 66

October 2010

## Core 056



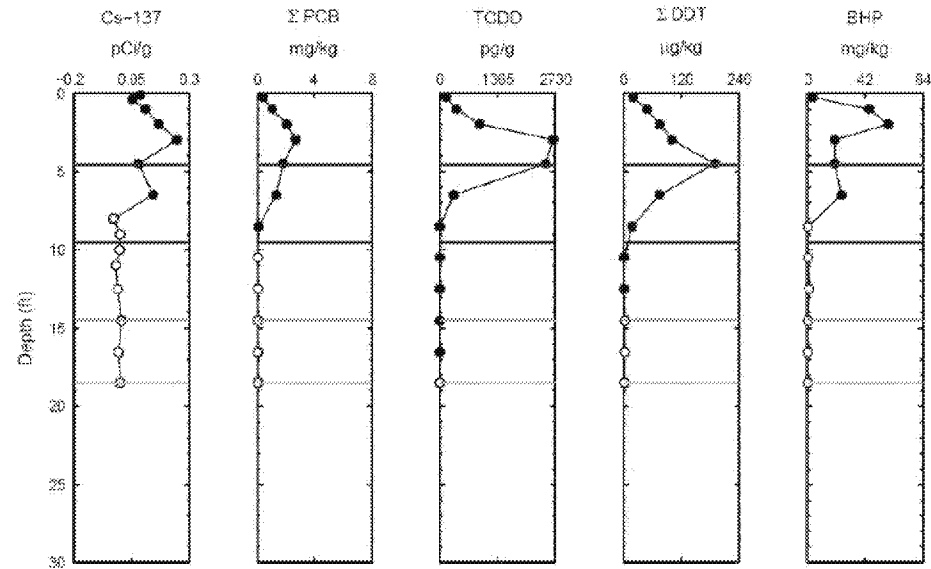
Lines above estimate 1940 depth based on the following methods:

— Cs-137 1954 Horizon Method    — Cs-137 1963 to 1954 Slope Method  
 — Cs-137 1963 Peak Method    — Pb-210 Regression Method

### Notes:

Phase 1  
 RM: 0.95  
 Non-Channel  
 Non-Be7 Bearing  
 In Potential USACE High Net Deposition Area

## Core 077



Lines above estimate 1940 depth based on the following methods:

— Cs-137 1954 Horizon Method    — Cs-137 1963 to 1954 Slope Method  
 — Cs-137 1963 Peak Method    — Pb-210 Regression Method

### Notes:

Phase 2  
 RM: 0.95  
 Non-Channel  
 Be7 > 0.5 pCi/g  
 In Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



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Newark Bay Chemical and Radiological Downcore Profiles for  
Core 056 and Core 077

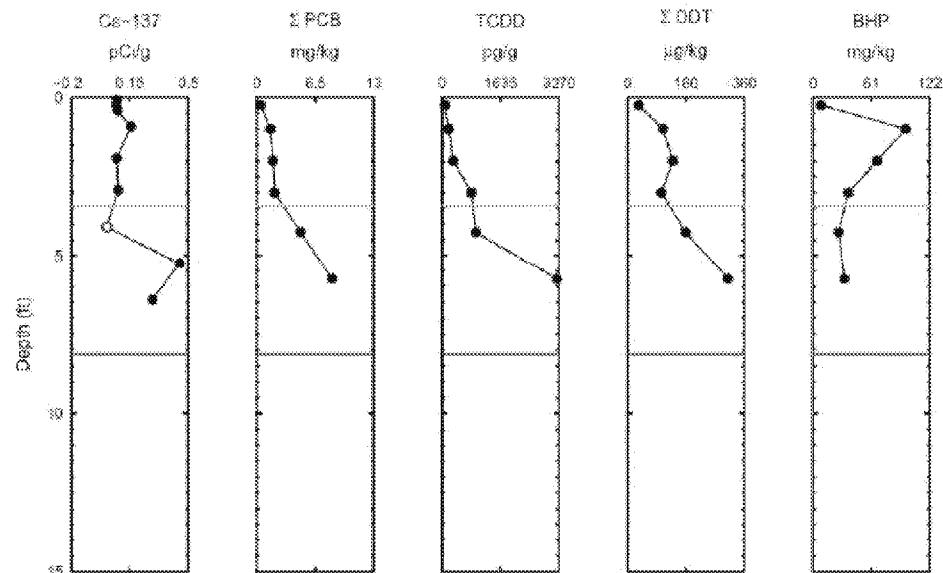
Newark Bay RI/FS Oversight

Figure 67

October 2010



## Core 051



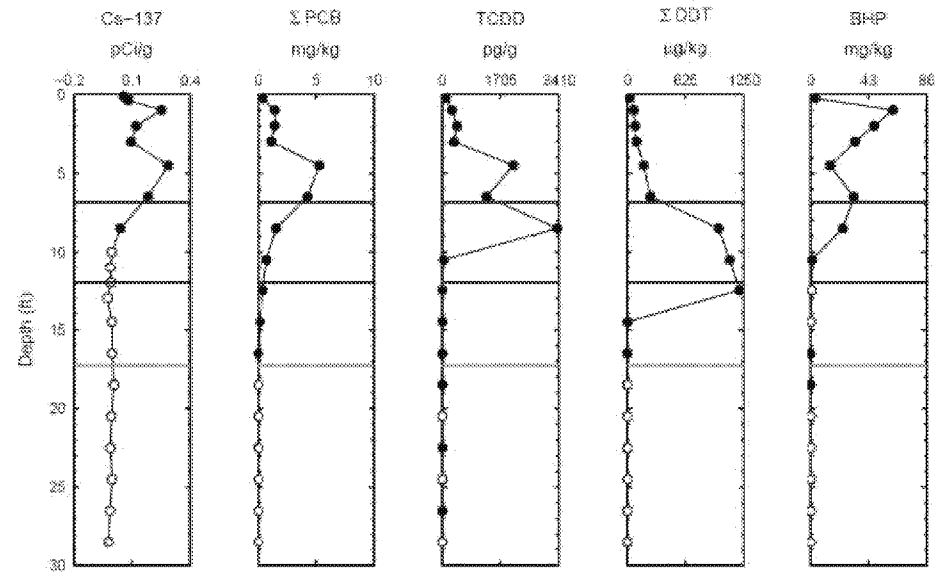
Lines above estimate 1940 depth based on the following methods:

— Cs-137 1954 Horizon Method      — Cs-137 1963 to 1954 Slope Method  
 — Cs-137 1963 Peak Method      — Pb-210 Regression Method

### Notes:

Phase 1  
 RM: 1.5  
 Non-Channel  
 Non-Be7 Bearing  
 In Potential USACE High Net Deposition Area

## Core 076



Lines above estimate 1940 depth based on the following methods:

— Cs-137 1954 Horizon Method      — Cs-137 1963 to 1954 Slope Method  
 — Cs-137 1963 Peak Method      — Pb-210 Regression Method

### Notes:

Phase 2  
 RM: 1.5  
 Non-Channel  
 Non-Be7 Bearing  
 In Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



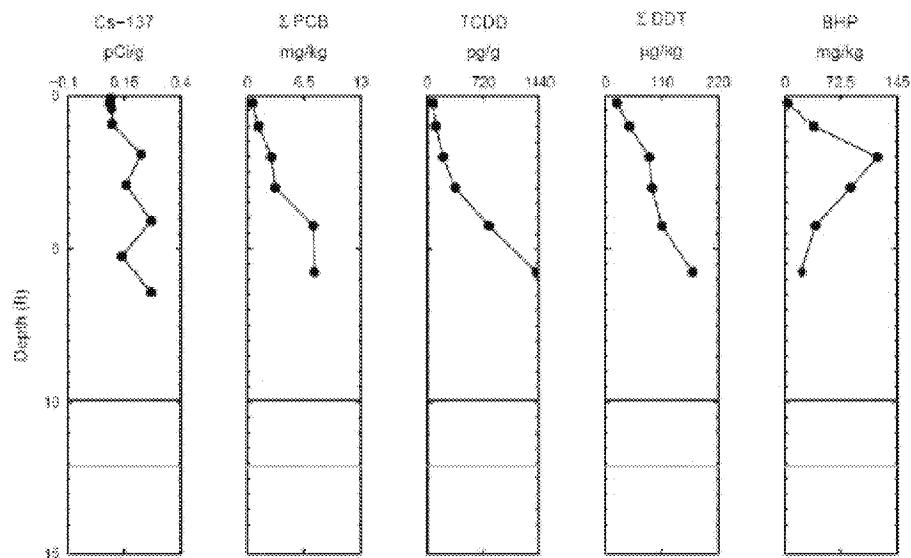
Newark Bay Chemical and Radiological Downcore Profiles for  
Core 051 and Core 076

Newark Bay RI/FS Oversight

Figure 68

October 2010

## Core 044



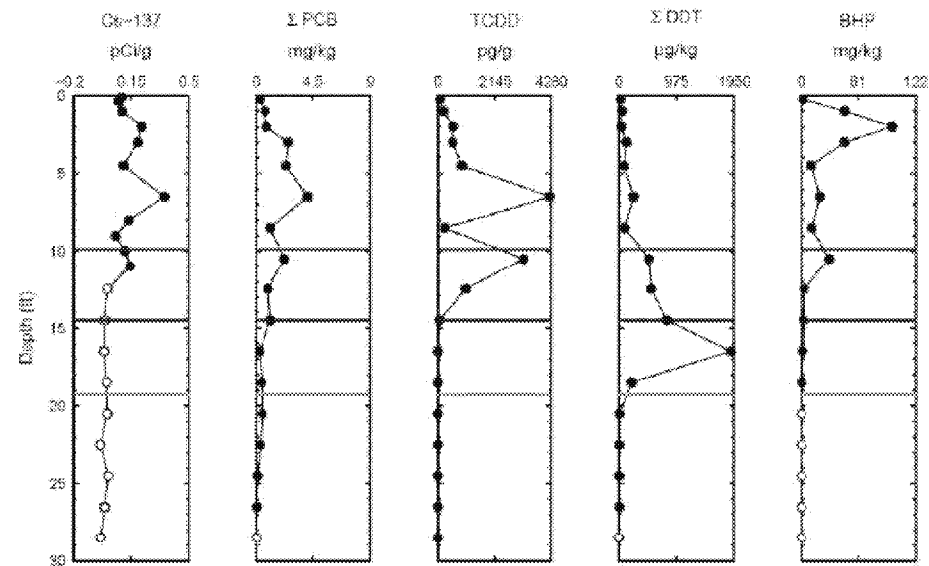
Lines above estimate 1940 depth based on the following methods:

— Cs-137 1954 Horizon Method      - - - - - Cs-137 1963 to 1954 Slope Method  
 — Cs-137 1963 Peak Method      - - - - - Pb-210 Regression Method

### Notes:

Phase 1  
 RM: 2.06  
 Non-Channel  
 Be7 > 0.5 pCi/g  
 In Potential USACE High Net Deposition Area

## Core 074



Lines above estimate 1940 depth based on the following methods:

— Cs-137 1954 Horizon Method      - - - - - Cs-137 1963 to 1954 Slope Method  
 — Cs-137 1963 Peak Method      - - - - - Pb-210 Regression Method

### Notes:

Phase 2  
 RM: 2.06  
 Non-Channel  
 Non-Be7 Bearing  
 In Potential USACE High Net Deposition Area

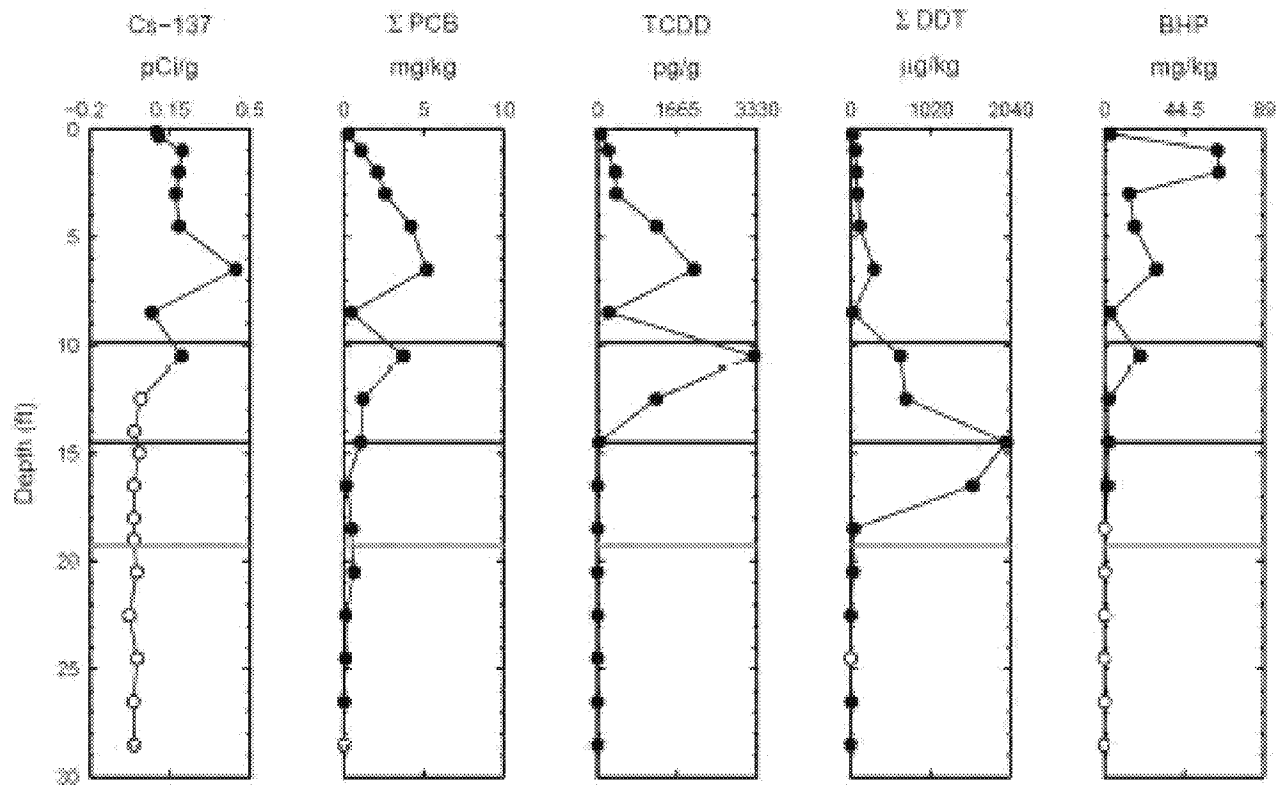
Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



Newark Bay Chemical and Radiological Downcore Profiles for  
 Core 044 and Core 074  
 Newark Bay RI/FS Oversight

Figure 69

October 2010



Lines above estimate 1940 depth based on the following methods:

- |                               |                                     |
|-------------------------------|-------------------------------------|
| —— Cs-137 1954 Horizon Method | —— Cs-137 1963 to 1954 Slope Method |
| —— Cs-137 1963 Peak Method    | —— Pb-210 Regression Method         |

**Notes:**

RM: 2.17

Non Channel

Non- Be7 Bearing

In Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



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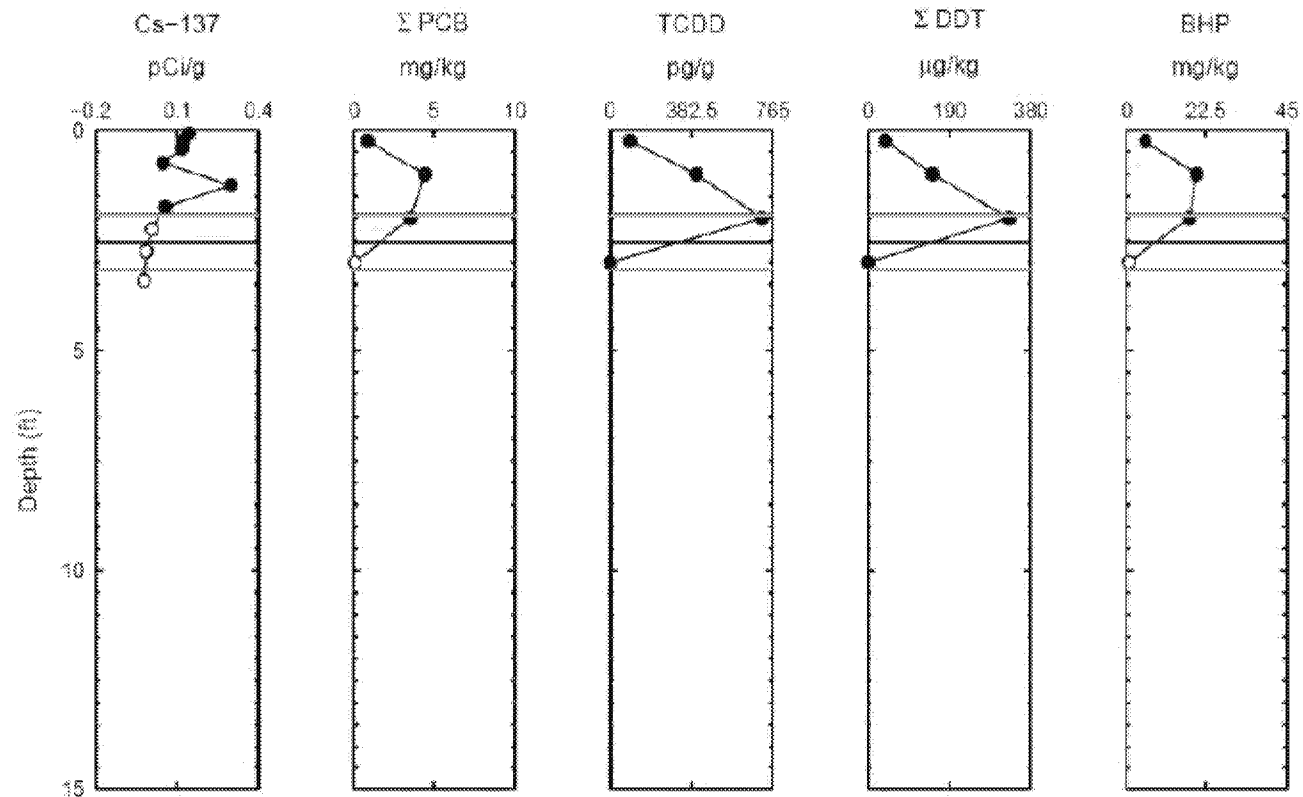


## Newark Bay Chemical and Radiological Downcore Profiles for Core 092

Newark Bay RI/FS Oversight

Figure 70

October 2010



Lines above estimate 1940 depth based on the following methods:

- Cs-137 1954 Horizon Method
- Cs-137 1963 to 1954 Slope Method
- Cs-137 1963 Peak Method
- Pb-210 Regression Method

**Notes:**

Phase 1

RM: 2.4

Non-Channel

Be7 > 0.5 pCi/g

In Potential USACE High Net Deposition Area

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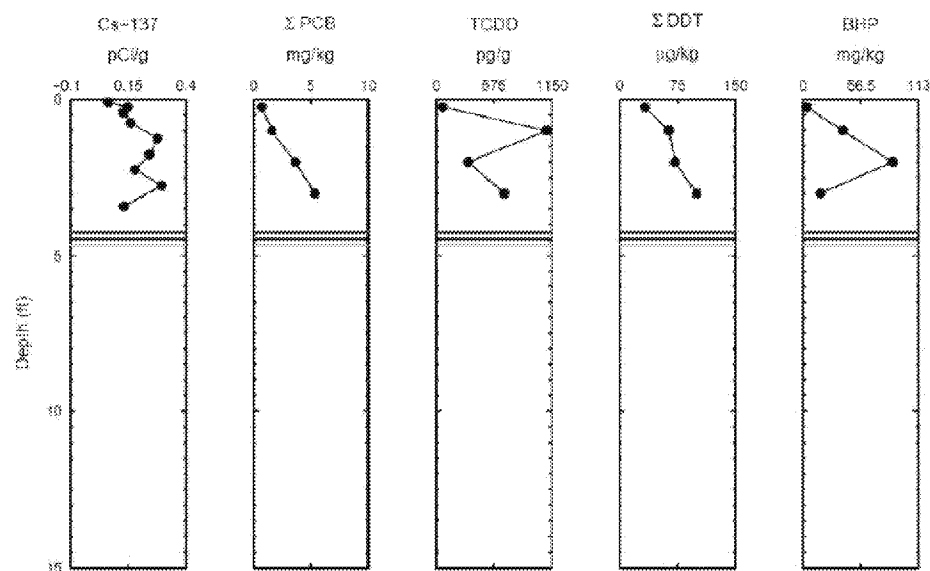
## Newark Bay Chemical and Radiological Downcore Profiles for Core 037

Newark Bay RI/FS Oversight

Figure 71

October 2010

## Core 032



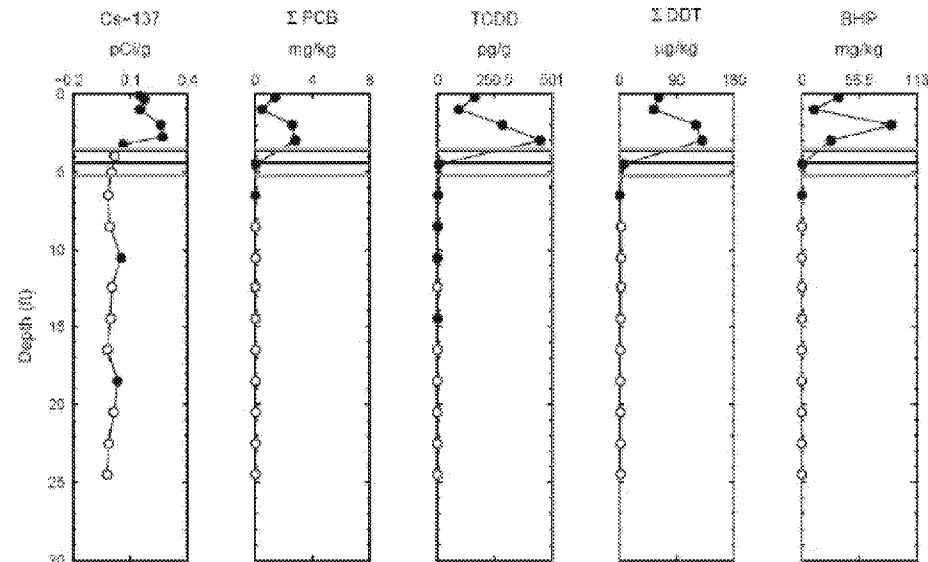
Lines above estimate 1940 depth based on the following methods:

— Cs-137 1954 Horizon Method      - - - - - Cs-137 1963 to 1954 Slope Method  
 — Cs-137 1963 Peak Method      - - - - - Pb-210 Regression Method

### Notes:

Phase 1  
 RM: 2.86  
 Non-Channel  
 Be7 > 0.5 pCi/g  
 Not in Potential USACE High Net Deposition Area

## Core 073



Lines above estimate 1940 depth based on the following methods:

— Cs-137 1954 Horizon Method      - - - - - Cs-137 1963 to 1954 Slope Method  
 — Cs-137 1963 Peak Method      - - - - - Pb-210 Regression Method

### Notes:

Phase 2  
 RM: 2.86  
 Non-Channel  
 Non-Be7 Bearing  
 Not in Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.

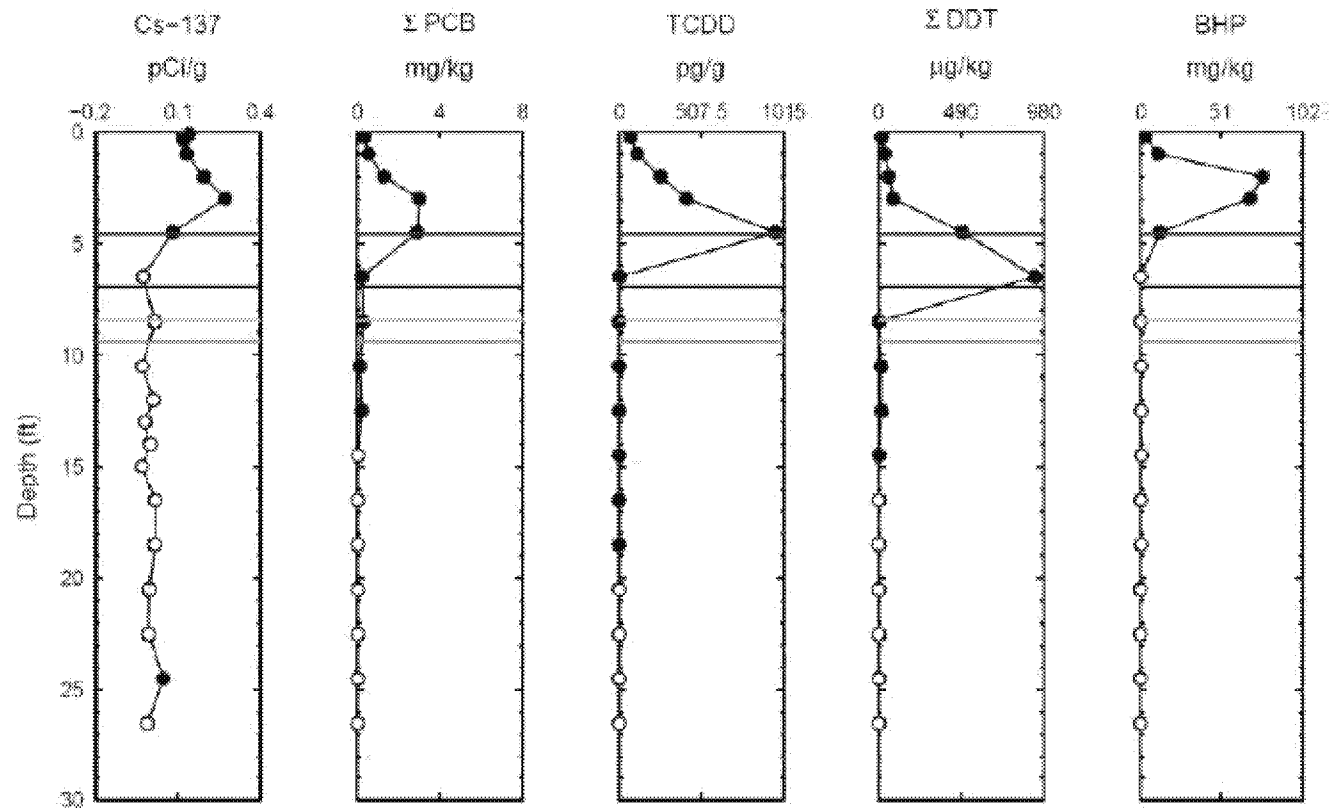


Newark Bay Chemical and Radiological Downcore Profiles for  
 Core 032 and Core 073  
 Newark Bay RI/FS Oversight

Figure 72

October 2010





Lines above estimate 1940 depth based on the following methods:

- Cs-137 1954 Horizon Method
- Cs-137 1963 to 1954 Slope Method
- Cs-137 1963 Peak Method
- Pb-210 Regression Method

**Notes:**

Phase 2

RM: 3.33

Non-Channel

Be7 > 0.5 pCi/g

In Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



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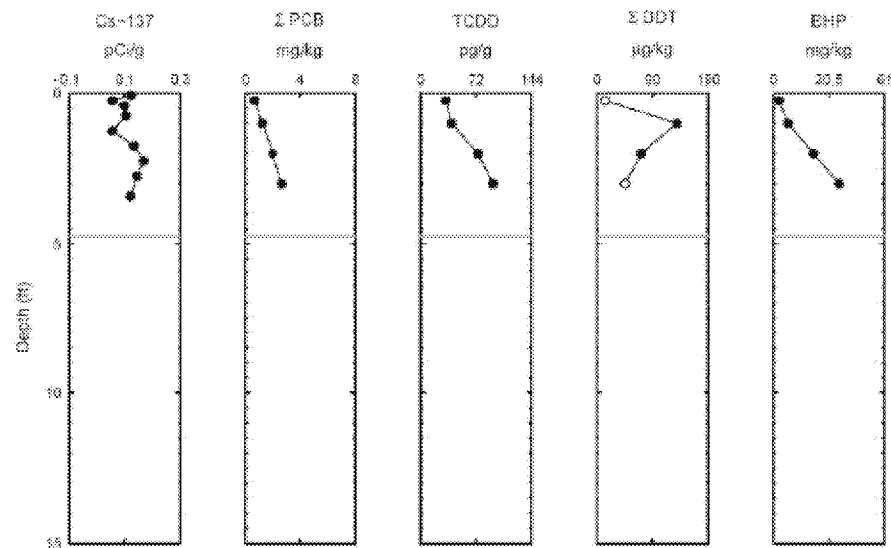
Newark Bay Chemical and Radiological Downcore Profiles for  
Core 091

Newark Bay RI/FS Oversight

Figure 73

October 2010

## Core 007



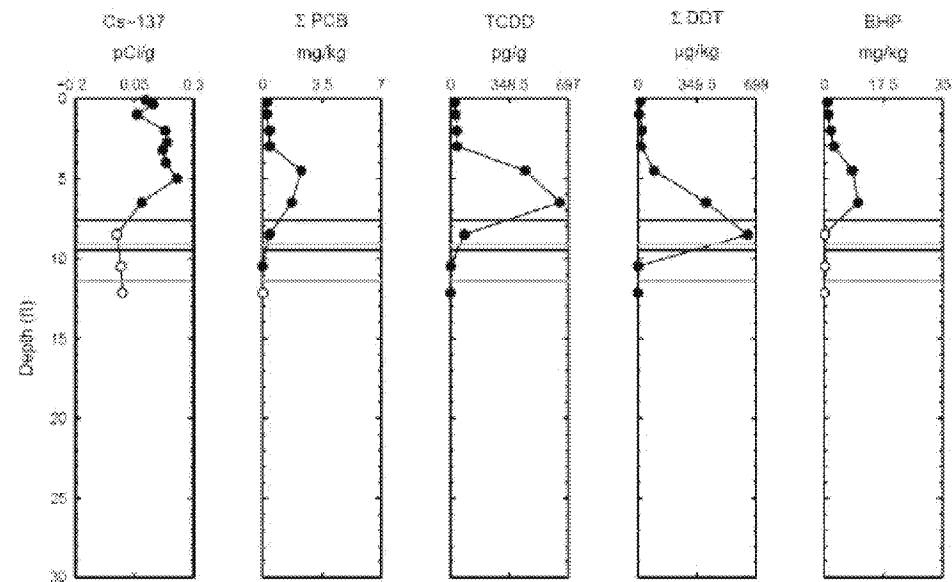
Lines above estimate 1940 depth based on the following methods:

— Cs-137 1954 Horizon Method      — Cs-137 1963 to 1954 Slope Method  
 — Cs-137 1963 Peak Method      — Pb-210 Regression Method

### Notes:

Phase 1  
 RM: 4.36  
 Non-Channel  
 Non-Be7 Bearing  
 In Potential USACE High Net Deposition Area

## Core 071



Lines above estimate 1940 depth based on the following methods:

— Cs-137 1954 Horizon Method      — Cs-137 1963 to 1954 Slope Method  
 — Cs-137 1963 Peak Method      — Pb-210 Regression Method

### Notes:

Phase 2  
 RM: 4.36  
 Non-Channel  
 Be7 > 0.5pCi/g  
 In Potential USACE High Net Deposition Area

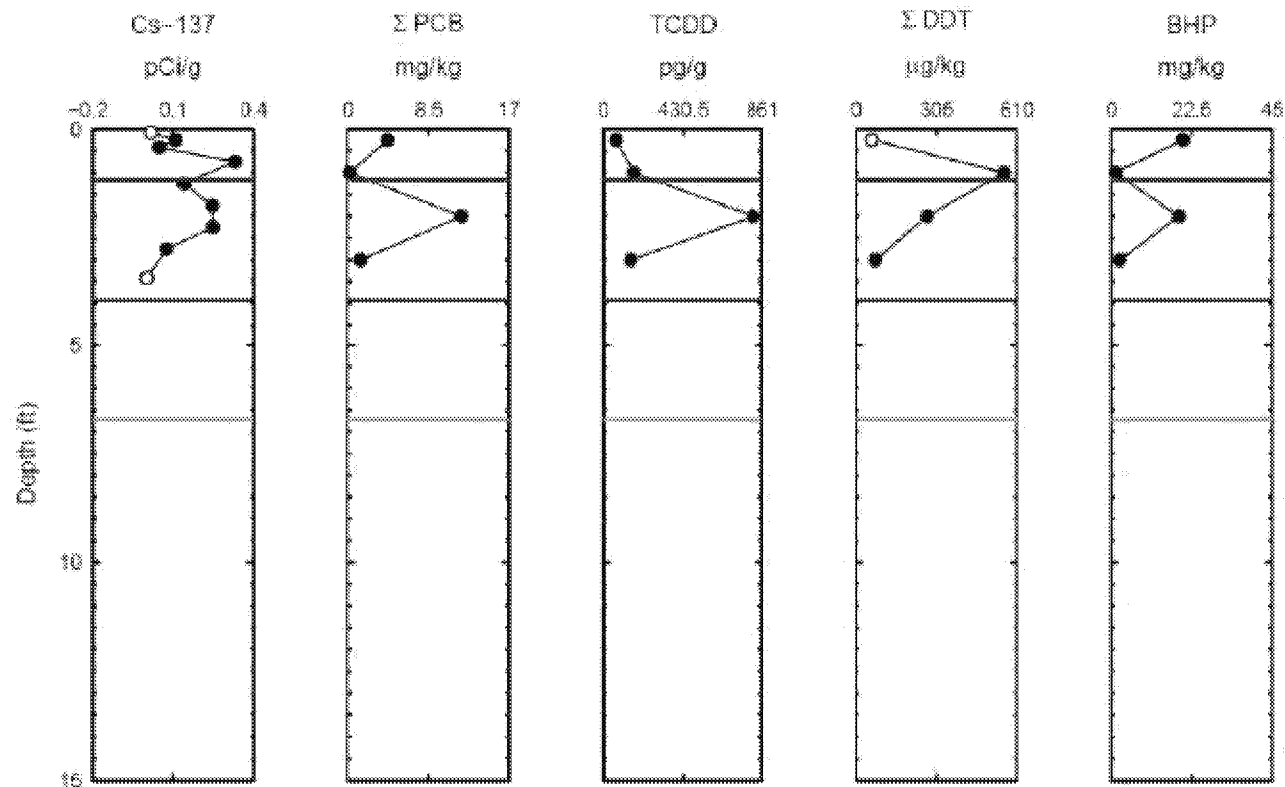
Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



Newark Bay Chemical and Radiological Downcore Profiles for  
 Core 007 and Core 071  
 Newark Bay RI/FS Oversight

Figure 74

October 2010



Lines above estimate 1940 depth based on the following methods:

- Cs-137 1954 Horizon Method
- Cs-137 1963 to 1954 Slope Method
- Cs-137 1963 Peak Method
- Pb-210 Regression Method

**Notes:**

Phase 1  
 RM: 4.73  
 Non Channel  
 Non-Be7 Bearing  
 Not in Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



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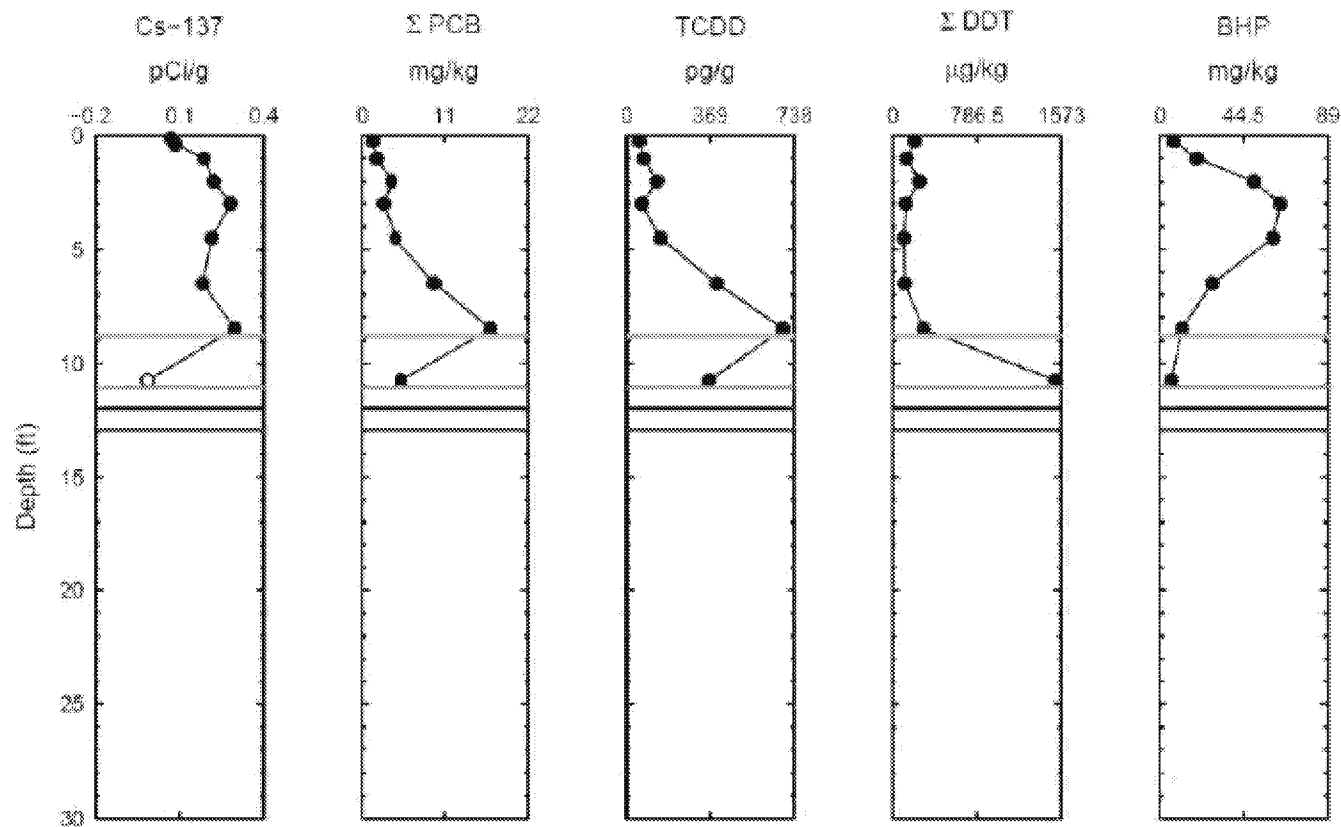


## Newark Bay Chemical and Radiological Downcore Profiles for Core 015

Newark Bay RI/FS Oversight

Figure 75

October 2010



Lines above estimate 1940 depth based on the following methods:

- Cs-137 1954 Horizon Method
- Cs-137 1963 to 1954 Slope Method
- Cs-137 1963 Peak Method
- Pb-210 Regression Method

#### Notes:

Phase 2

RM: 4.73

Non-Channel

Be7 > 0.5 pCi/g

In Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



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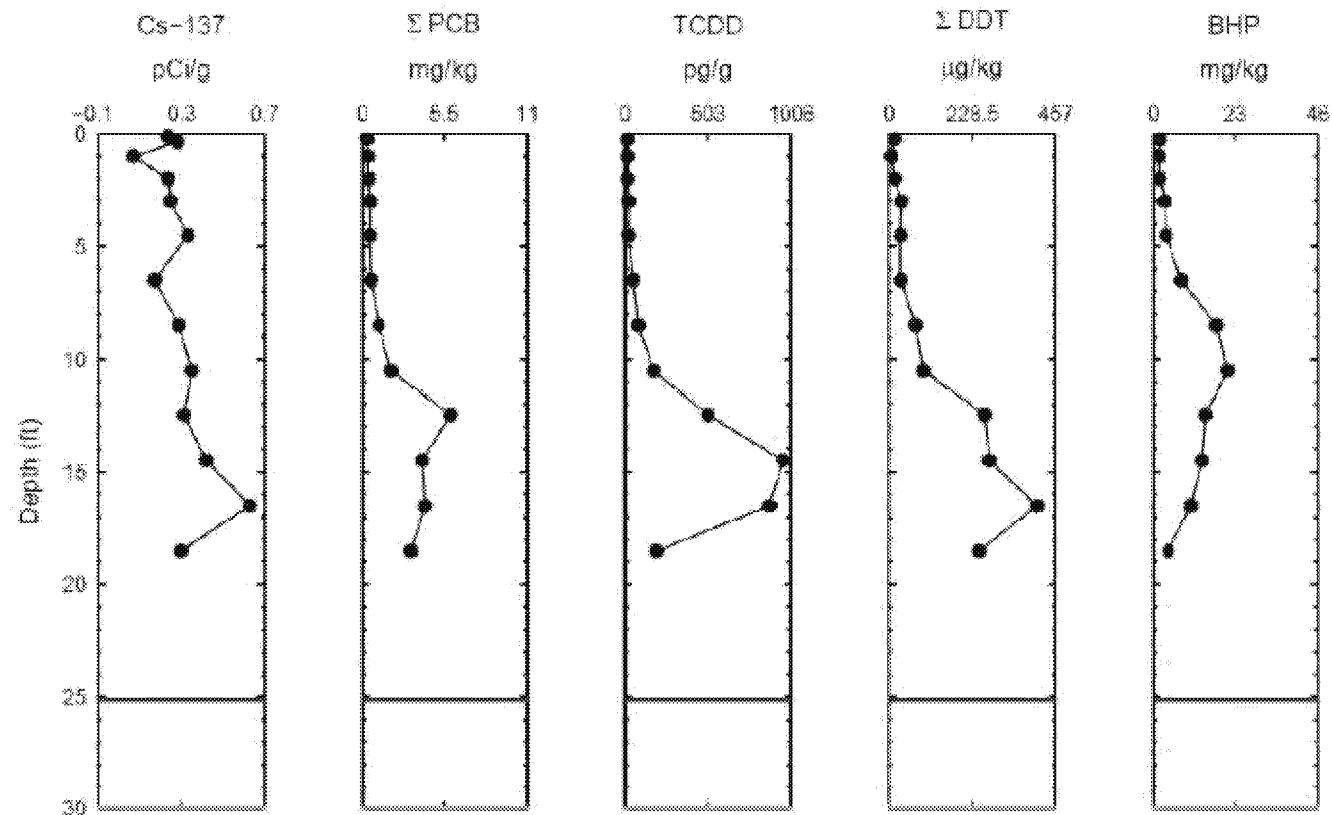


## Newark Bay Chemical and Radiological Downcore Profiles for Core 082

Newark Bay RI/FS Oversight

Figure 76

October 2010



Lines above estimate 1940 depth based on the following methods:

- Cs-137 1954 Horizon Method
- Cs-137 1963 to 1954 Slope Method
- Cs-137 1963 Peak Method
- Pb-210 Regression Method

**Notes:**

Phase 2

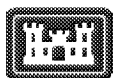
RM: -4.84 (Kill Van Kull)

Non Channel

Non-Be7 Bearing

Not in Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



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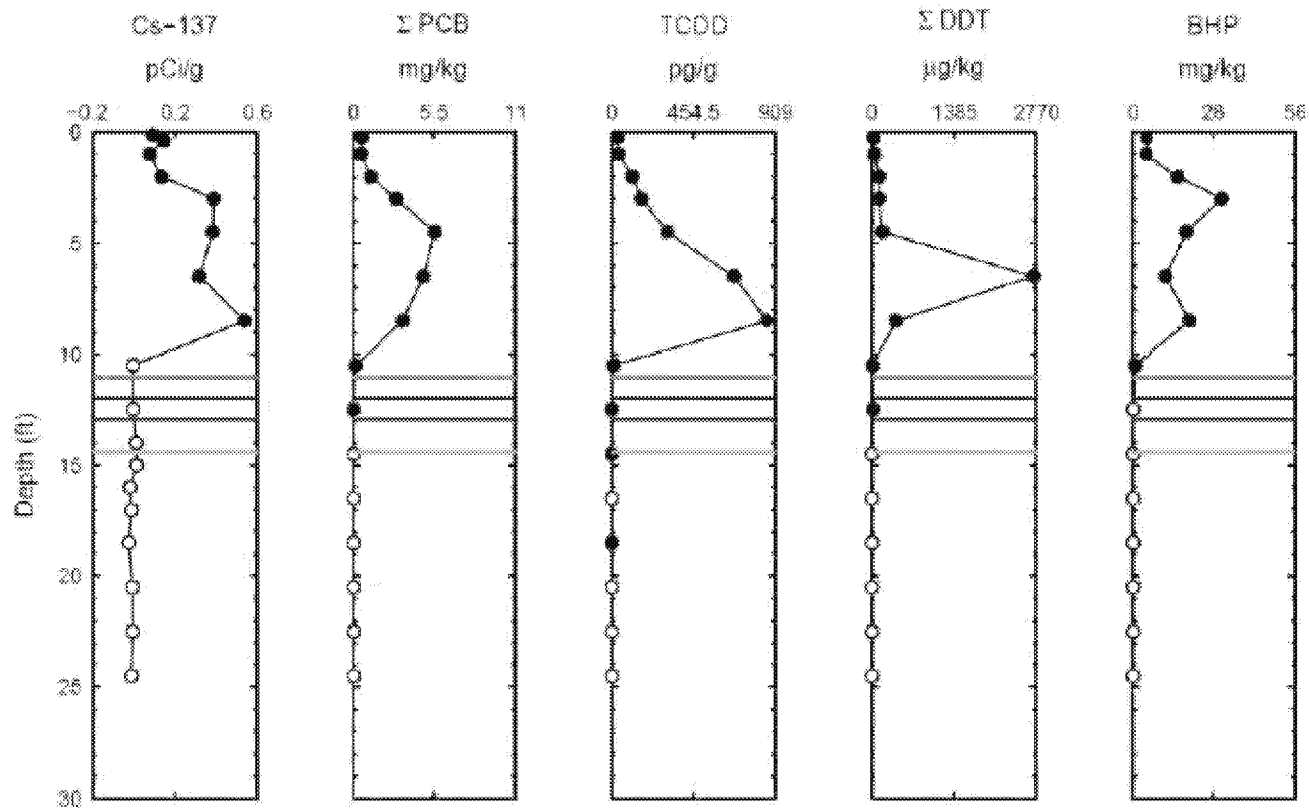
## Newark Bay Chemical and Radiological Downcore Profiles for Core 096

Newark Bay RI/FS Oversight

Figure 77

October 2010





Lines above estimate 1940 depth based on the following methods:

- Cs-137 1954 Horizon Method
- Cs-137 1963 to 1954 Slope Method
- Cs-137 1963 Peak Method
- Pb-210 Regression Method

**Notes:**

Phase 2  
RM: 5.02  
Non Channel  
Non-Be7 Bearing  
In Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



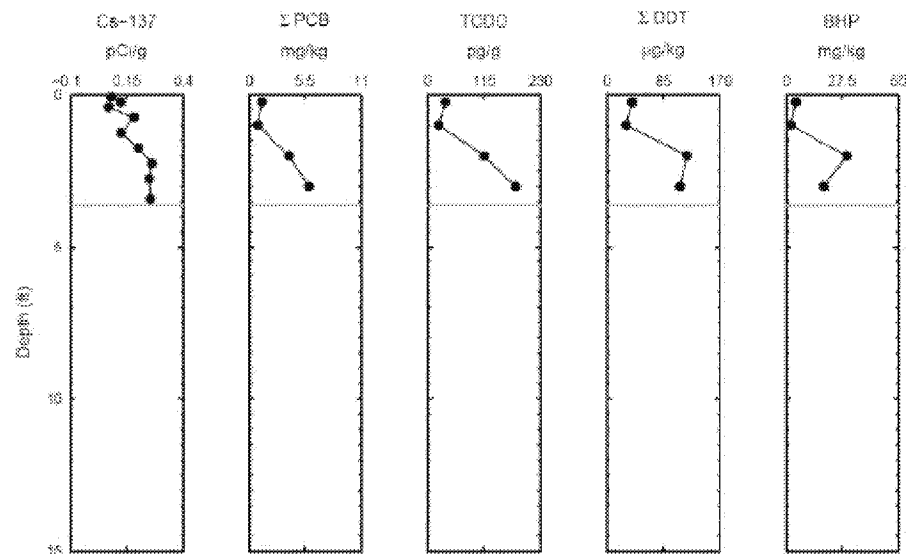
Newark Bay Chemical and Radiological Downcore Profiles for  
Core 090

Newark Bay RI/FS Oversight

Figure 78

October 2010

## Core 005



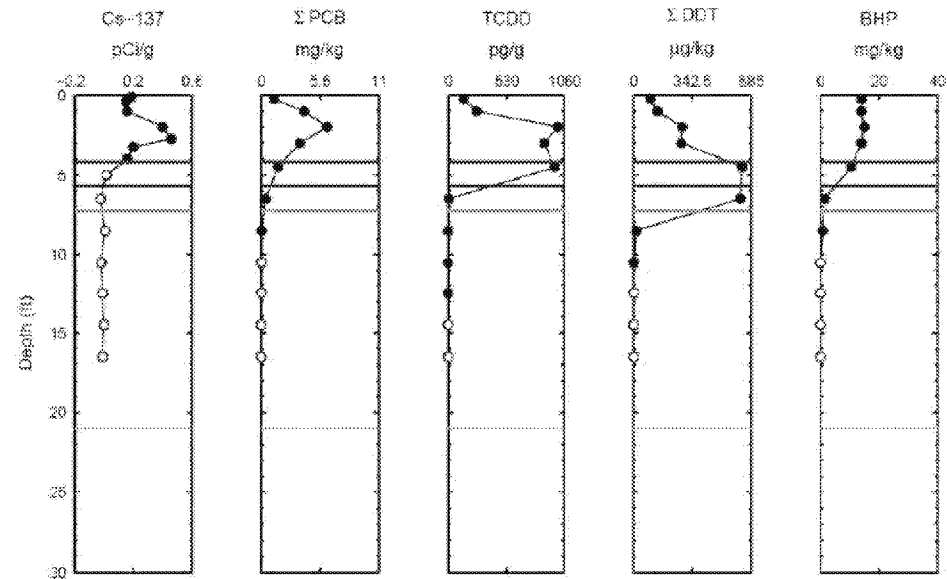
Lines above estimate 1940 depth based on the following methods:

— Cs-137 1954 Horizon Method      - - - - - Cs-137 1963 to 1954 Slope Method  
 — Cs-137 1963 Peak Method      - - - - - Pb-210 Regression Method

### Notes:

Phase 1  
 RM: 5.02 (Shooters Island)  
 Non-Channel  
 Non-Be7 Bearing  
 In Potential USACE High Net Deposition Area

## Core 070



Lines above estimate 1940 depth based on the following methods:

— Cs-137 1954 Horizon Method      - - - - - Cs-137 1963 to 1954 Slope Method  
 — Cs-137 1963 Peak Method      - - - - - Pb-210 Regression Method

### Notes:

Phase 2  
 RM: 5.02 (Shooters Island)  
 Non-Channel  
 Non-Be7 Bearing  
 In Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.

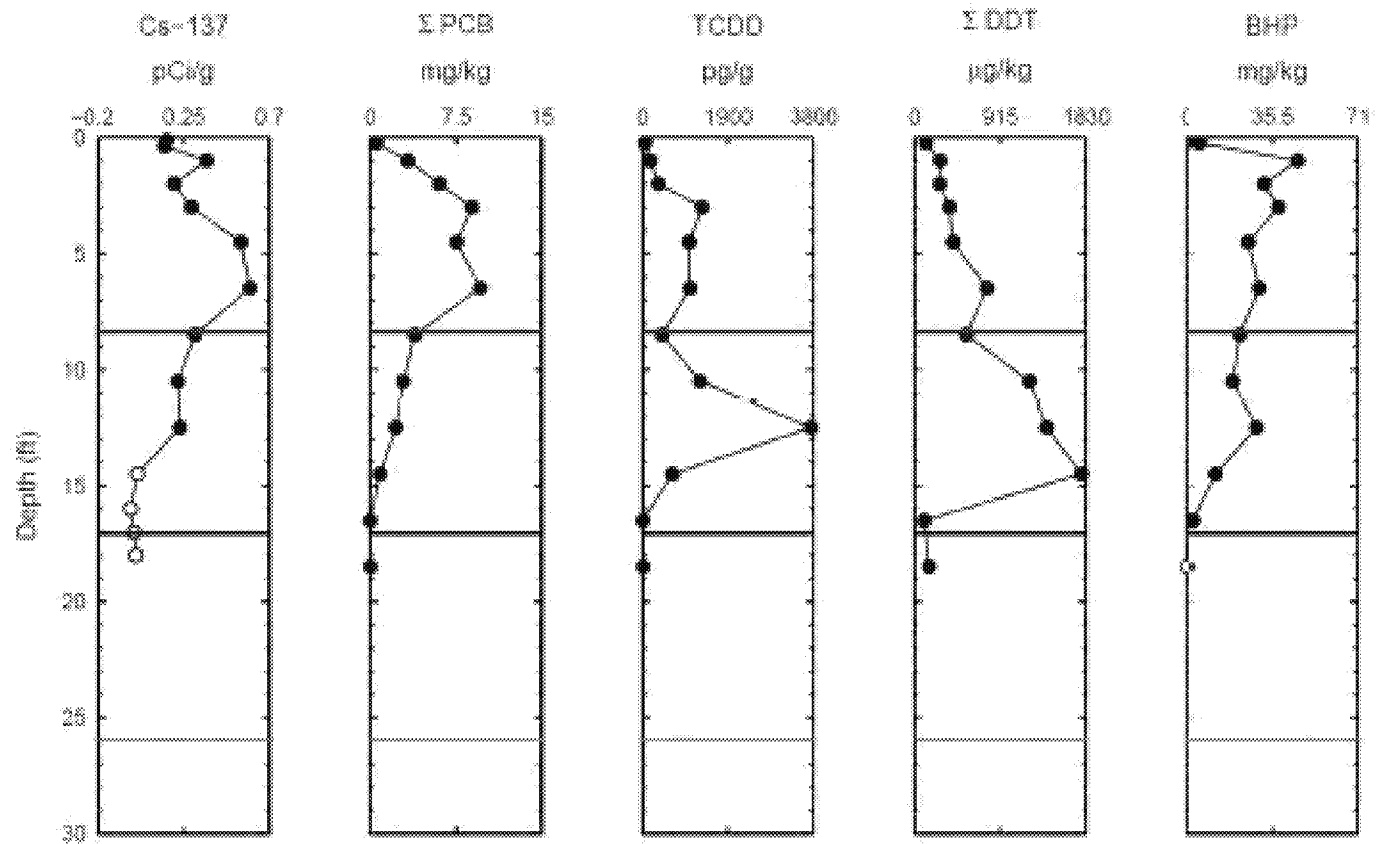


Newark Bay Chemical and Radiological Downcore Profiles for  
Core 005 and Core 070

Newark Bay RI/FS Oversight

Figure 79

October 2010



Lines above estimate 1940 depth based on the following methods:

- Cs-137 1954 Horizon Method
- Cs-137 1963 to 1954 Slope Method
- Cs-137 1963 Peak Method
- Pb-210 Regression Method

**Notes:**

Phase 2

RM: 6

Non Channel

Be7 >1 pCi/g

In Potential USACE High Net Deposition Area

Down Core Profiles are reprints from the TSI "Phase 1 and 2 Sediment Deposition Report" dated April 2009.



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## Newark Bay Chemical and Radiological Downcore Profiles for Core 089

Newark Bay RI/FS Oversight

Figure 80

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